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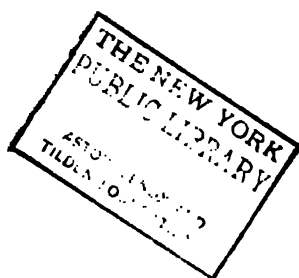
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PHYSICAL MAP OF THE UNITED STATES BY A GUYOT



AMERICAN EDUCATIONAL MONTHLY,

DEVOTED TO

Popular Instruction and Literature.

VOLUME II.



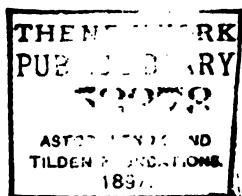
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PORTRAIT OF ABRAHAM LINCOLN.

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AMERICAN EDUCATIONAL MONTHLY.

VOL. II.—JANUARY, 1865.—NO. 1.

THE GREAT CHARTER-HOUSE SCHOOL.

ONE of the well-known schools of England, ranking behind those of Eton, Westminster, and Winchester, but of great reputation, nevertheless, is that of the Charter-House. The Hospital of the Charter-House was founded by Thomas Sutton, in the reign of James I., and, as originally established, consisted of "an Hospital for the relief of poor aged, maimed, needy, or impotent people, and a Free School for the instructing, teaching, maintenance, and education of poor children or scholars."

The School, with which alone we are at present here concerned, is open to boys of the three following descriptions:—Foundation scholars; Non-Foundation scholars, including boarders in the houses approved by the Governors for the purpose of receiving such boys; and Day boys.

The Foundation scholars are, with certain exceptions, nominated by the Governors, who exercise this right in rotation. The maximum number fixed by the Statutes of 1627 was 40; to this number, however, certain additions have been made from time to time, the result of which is, that there are now 44 on the Foundation as scholars. It is stated to be the intention of the Governors to increase the number to 60. Of the present number (44), under orders made by the Governors, in 1850 and 1860, eight places are appropriated as prizes for competition among boys in their 14th or 15th year, who shall have previously spent not less than one year in the school. The present result of this is, "that every year two scholars are selected by competition; and on their names being reported to the Assembly, they are ap-

pointed scholars, and become entitled to all the advantages" belonging to that position. Those boys who are nominated "must be between the ages of 10 and 14, and able to pass an examination proportioned to age in classics and arithmetic." This examination was first instituted, and its subjects and extent defined, by orders made by the Governors, in 1844 and 1845. It appears, as stated by the Head Master of the School, to be "of the most elementary kind."

The Foundation scholars board in a house appropriated to them, to which very considerable additions have recently been made by the Governors, "at a cost of more than £4000." In this house there are two common rooms, one for the upper, the other for the lower boys; breakfast and tea being taken by all in the latter. There is also a dining hall, and for a few of the upper boys small studies.

The privileges and advantages of a Foundation scholar are as follows:—"He receives gratuitously board, lodging, medical attendance, and education, including classics, mathematics, French, German (if in sixth form), history, geography, and divinity. He is also provided with clothes during the school terms, and with a gown; and, if in the upper school, with a cap or trencher. If he passes a satisfactory examination at the age of 18, he receives an exhibition of £80 a year for four years at any college in either of the Universities of Oxford or Cambridge." A gratuity of £100 is also granted in the case of any Foundation scholar who goes into the army or navy, or any profession or trade requir-

ing an outfit. "In case of illness, they are taken care of by the matron, in the apartments provided for them in her house, and are nursed and dieted in any illness without any charge for medical attendance or medicine." The only *school* charges to which a Foundation scholar is liable are for books and stationery; and a payment of four guineas per annum by lower boys, and five guineas by upper boys, to the matron, for private washing and the care of private clothes. Foundation scholars have also the preference, under the Charter, to the nine livings in the patronage of the Governors. By an order of the Governors of 4th March, 1856, scholars on the Foundation are considered superannuated on completing the 17th year of their age, unless they are reported by the examiners as fit to remain as candidates for exhibitions. Such candidates leave the school on completing their 18th year, unless they are in the 6th form, in which case they remain until the completion of their 19th year.

For the exhibitions there is at present no competitive examination; for it appears that every Foundation scholar who satisfies the Examiners (gentlemen nominated by the Archbishop of Canterbury), so far as to render it most probable, in their opinion, that he will pass the first public examination in the University, is entitled to an exhibition.

At present, all these exhibitions are of the same value, viz., £80 per annum for four years, with an additional sum of £20 in the last year.

The boys not on the Foundation may be classed under two heads, Boarders and Day boys. The former are lodged in houses sanctioned by the Governors. In February, 1862, when the last written return was made to the Commissioners, they were 45 in number, viz., 30 in the Head Master's house, and 15 in that of the Second Master. Occasionally, also, a few boys have lodged in the private house of the Reader. The charge in the houses of the two Masters named are: for board and education, including washing and medical attendance, £80 per annum up to the fifth form, and in and above that form £90. "Education" includes classics, mathematics,

writing, geography, history, and divinity.

There are extra charges for,—

French, £2 2s. (Voluntary except for Foundation.)

German, £2 2s. (Voluntary except in 6th Form.)

Chemistry, £2 2s.	} Voluntary.
Singing, £2 2s.	
Drawing, £5 5s.	
Drilling, £1 1s.	

In the few cases in which a boy has private tuition, the charge made by the private tutor for each is from eight to twelve guineas per annum, varying with the place of each boy in the school, and his want of individual superintendence.

For Day boys, the annual charge is £18 18s. per annum. The average number is from 30 to 35. The Governors have recently provided for these boys two comfortable rooms, which they may occupy, if they wish, between school hours.

The total number of the School has varied very materially from time to time. A table showing the numbers and fluctuations since 1818 is given by Mr. Elwyn, the late Head Master. It appears from this that the numbers were—

In 1825,	.	.	.	.	480
" 1835,	.	.	.	.	99
" 1845,	.	.	.	.	187
" 1855,	.	.	.	.	188

The number is now limited, by an order of the Governors, to 200. At present it is 136.

The School is arranged in separate Classical, Mathematical, and French departments. Of these, the Classical department has six forms, one of which, the fifth, is divided into two parts; the Mathematical has seven divisions, and the French three. In each of the departments (with the exception of the fifth and sixth Classical forms) a boy rises mainly by proficiency, though age is not disregarded. The boys take places at, and are marked at the end of, each lesson, and according to the marks gained are arranged at the end of the week in order of merit. The plan of adding marks for attention and progress in the Mathematical divisions, and those gained in the Classical work, has been lately adopted, and appears

to work well. In the fifth and sixth Classical forms marks are given for work done; in the former, changes in place are made from time to time according to merit (more consideration being given to age than in the lower forms); in the latter, besides arranging the boys according to the marks gained, a prize is given each term for the highest marks.

There are six resident Masters, all of whom take some part in the Classical instruction. All take part also in the Mathematical teaching, though not in the same order as in the former case.

For the instruction in French, two Masters attend twice in a week for two hours on each occasion. The study of French is, under a recent order of the Governors, obligatory upon all who do not learn German. A German Master instructs the sixth form (all in that form being obliged to learn it) once a week for two hours, and those of other forms who choose it. A Drawing Master, a Singing Master, and a Chemical Lecturer, attend respectively twice a week. These, as before stated, are voluntary subjects.

The following is the gross amount of remuneration stated by Mr. Elwyn to have been received on an average of years, from all sources, by himself and those Masters who are engaged in teaching those branches of education which are obligatory upon the whole or some portion of the school.

Head Master, \$5,324 per annum.

Second Master, \$3,388 per annum.

First Assistant, \$896, without rooms.

Second Assistant (who superintends the Foundation boys, and has a few private pupils), \$968, with rooms.

Third Assistant (also Reader, with an independent salary), \$532.40, with rooms.

Mathematical Assistant (including income from private pupils), \$968, with rooms.

The French Master receives \$389.20 from the Governors, and two guineas from each of the non-foundation boys who learn (from 40 to 50 in number), in all about \$22.30 per annum; the Assistant Mathematical Master about \$532.40 per annum; the German Master about \$203.28 per annum. In our present depreciated currency, the above must be multiplied by a figure varying from 2.15 to 2.50.

The appointment of the Head and Second Masters rests with the Governors; the nomination of the Mathematical Usher with the Head Master, subject to the approval of the Governors; and the other Assistant Masters are appointed by the Head Master, with the approbation of the Master of the Hospital, who, in addition to the control of the Hospital, exercises a somewhat ill-defined, but practically an important, influence on the management of the School.

The ordinary and regular promotion from one form to another takes place once a year, and depends upon the annual examination, which applies to the whole School. Every boy, then, unless he is very backward, moves up from the form in which he is. A clever boy, however, would get a remove oftener than that, his promotion depending upon his marks, and his general conduct.

In promotion in the Classical forms no weight is attached to French, promotion in the French department being entirely distinct and independent. As regards Mathematics, however, Mr. Elwyn introduced a plan under which every week a boy is marked according as he has done his Mathematics, and these marks are added to his Classical marks, so as to affect his place in the Classical form, though his position in the Mathematical classes is distinct from his Classical position.

In the annual examination above referred to, the whole School is examined in Divinity, Classics, and Mathematics, and papers are set for the higher forms. This examination, as well as those mentioned below in these subjects, is conducted as above stated by examiners appointed by the Archbishop of Canterbury. Those boys who learn French, German, Drawing, or Chemistry, are also examined in these subjects. For the Foundation scholars there is an additional examination in the month of December in Classics and Arithmetic, and a report is also presented from the Head French Master of their progress and conduct.

At the annual examination prizes are awarded in all the Classical, Mathematical, French, and German divisions, and there are also medals given in the fifth and sixth forms for Latin prose and Greek verse

translation, and for original composition in English and Latin verse. Divinity prizes, too, are given by the Reader; and two prizes, one in each of the fifth and sixth forms, by the Preacher, for a Theological Essay. In Chemistry and Drawing prizes are given by the respective teachers of these subjects. These are all open to the competition of the whole School. As regards exhibitions—besides those above referred to, limited to the Foundation scholars, and available at any College at Oxford or Cambridge, open to the whole School—there has also been recently established, in memory of Sir Henry Havelock, an exhibition called “the Havelock Exhibition,” of the annual value of £20. The subjects for this examination are Latin, French, History (Modern and Ancient), and Geography (definite portions), English Dictation and Mathematics, the latter forming a principal element in the examination. This examination is conducted by special examiners, appointed by the Master of the Hospital and the Head Master of the School. *Ceteris paribus*, a preference is given to a boy intending to enter the army, or some Government office.

For those not on the Foundation there has recently been established, in memory of the late Hon. J. O. Talbot, a Scholarship tenable at any one of the four Universities of Oxford, Cambridge, Dublin, or Durham, an annual Gold Medal, and a prize of books. For these latter rewards all boys who have been two years in the School may compete.

As regards punishments, Mr. Elwyn states as follows: “There is a book in which the name of a boy who has been guilty of any ordinary fault, such as inattention, being late, imperfect, etc., is entered. If the name of a boy appear three times in one week in this book he is flogged; impositions are also given, the mode of marking an offence in ordinary cases being left to the discretion of each Master. Grave moral offences are visited with immediate punishment, as are also serious breaches of discipline. In the case of upper boys, flogging (which is the only corporal punishment employed in the School) is most rarely employed, and their punishment consists in imposition and in degradation from their rank and privileges.”

The monitorial system is in vogue for such as the Charter-House; and Mr. Elwyn for his evidence, attaches much importance to it as a valuable aid in the maintenance of school discipline, as beneficial in creating a sense of responsibility, and as tending to prevent bullying. From the Foundation scholars four are selected by the Head Master, whose duty it is, in turn, to maintain order in school, and also in the house where the Foundation scholars board. In each of the boarding houses two, or sometimes three, are selected to perform similar duties in the house.

The power of fagging is assigned by the Head Master to the monitors and to others of the sixth and fifth forms, and is exercised over boys below the fourth form, implying the right to exact certain personal services, such as making tea, fetching anything which the senior boy may want, fagging out at cricket (limited to one hour a day), and occasional attendance at foot ball. “No menial service, such as cleaning shoes, etc.,” says Mr. Elwyn, “is allowed.” It appears, however, that two fags are obliged to look after the fires in the two rooms where the Foundation scholars sit, and to attend to the laboratory, duties both of a menial character, and the former of which, at any rate, entails often, upon small boys, the necessity of carrying heavy coal-scuttles. As regards the time during which fags can be employed, by a recent regulation made by Mr. Elwyn, no fagging is to be allowed between eight and ten in the evening; a certain period is thus secured to the junior boys for the preparation of their lessons, for reading, or amusement. The whole system, however, is a pernicious and vile one, and should be speedily abolished in all the schools. It has never prevailed in this country.

The Head Master is responsible for the management and discipline of the house in which the Foundation scholars are boarded. There is also an Assistant Master in the house, who directly superintends it. The authorizing of other boarding-houses rests with the Governors, who issue regulations for their management, and fix the number to be received in each house, as well as the total number to be permitted to resort to the School.

be made
-ly. i

HOW SHALL WE TEACH GEOGRAPHY?

WHILE great improvements have been made in modes of teaching many of the sciences, Geography has been comparatively neglected. It certainly cannot be from any just sense of its relative importance, that, while mathematics, and the languages, have been taught with the greatest thoroughness, teachers have been contented with the most superficial methods of teaching this subject.

Recently, however, the labors and lectures of one of the most eminent scholars* of the present day, have awakened a desire for something better—some more philosophic methods, and more satisfactory results, in the presentation of the subject of geography in our common schools. The conviction is beginning to be felt that this noblest of sciences has been sadly unappreciated, and that, instead of being a mere catalogue of facts to be committed to memory, it is capable of being made a means of growth to the mind, and of affording the highest exercise of all its powers.

But the question,—how, if this higher view of it be the correct one, is this subject to be presented to the child,—remains as yet unanswered.

It will probably not be questioned that the best possible method of study in any subject is that which, while it shall give the clearest and most perfect knowledge of the subject itself, shall, at the same time, furnish the best facilities for the complete and symmetrical development of the mind.

In order to determine such a method it is necessary to inquire, First, what is the law of the mind's development? Second, what is the nature of the subject to be presented, and what is the general plan of treatment growing out of its nature, and therefore inviolable? Third, by what special methods can this general plan be adapted to the needs of the mind in the several stages of its development?

I. The Development of the Mind.—Writers upon its laws and operations declare that though all the faculties of the mature mind exist from the beginning of its life in a

greater or less degree of activity, they yet attain their full development at different periods. They come into activity not simultaneously, but successively, the full action of each subsequent class requiring the previous development and activity of the preceding; just as all the capacities of the plant for producing leaf, stem, flower, and fruit, exist in the germ, yet these do not all appear at once, because the higher cannot be developed without the pre-existence of the lower as a basis.

The earliest to attain full activity are the perceptive faculties. These through their agents, the senses, are extremely active in the young child, and constitute the only means by which the images of the external world can enter his mind and give rise to thought. Through their use he is able to obtain a clear conception of the general form and condition of every thing of which they can take cognizance.

In simultaneous action with these is the conceptive power, by means of which the mind grasps and retains the impressions it receives through the perceptive powers; and is able to recall them, and learns to express them. In a higher development the same faculty is able, by means of ideas and conceptions previously acquired, to create images of things of which the perceptive powers have not taken cognizance.

Next to become active is that analytic power of the understanding, by means of which the general conception, which alone could be obtained in the preceding condition of the mind, is separated into its elements, and studied in detail; the knowledge acquired is considered and arranged; and now ideas are derived apart from the exercise of perception, which are expressed in the form of abstract propositions.

Lastly, is developed that action of the reasoning power by which the mind rises to high generalizations, attains the knowledge of general principles and laws, is able to ascertain the causes of phenomena observed, and from known causes to predict results.

We find, therefore, that though all the faculties of the mind act to a certain extent

* Professor Arnold Guyot.

in conjunction, there are yet three successive stages, each characterized by the predominant activity of certain powers, and consequently by a peculiar character of mental operations. In the first, that of the predominance of the perceptive powers, the child is constantly occupied in acquiring knowledge of the external world by the use of these powers, and through the expression of the knowledge so acquired becoming acquainted with language and other conventional signs of ideas, and is therefore becoming able to receive ideas from other minds through the medium of language.

In the second stage, that of the analytical power of the understanding, the knowledge of others, having now become accessible to him, is added to the results of his own more minute investigation, and finally becomes itself the subject of thought, analysis, and classification.

In the third, that of the predominance of the reasoning power, the mind having collected its materials, looks at them from a new point of view, and, from the study of them in their combinations, arrives at a knowledge of their relations, and of the phenomena resulting therefrom, and of the laws which govern their existence and operations.

If, therefore, any method of study is to contribute to the mind's development, it must furnish the appropriate degree of exercise for all these powers, in the order of their successive awakening; and we must distinguish, with Professor Guyot, three natural phases,—the perceptive, the analytic, and the synthetic,—through which the learner in Geography, as, indeed, in every branch of science, must pass before he can obtain a perfect knowledge of the subject of his study.

We may premise, then, as a general principle growing out of the laws of the mind and therefore governing the presentation of all subjects whatever, that the portion of the subject which addresses itself mainly to the powers of perception, and only gives the simplest possible exercise to the powers of the understanding or reasoning powers, is the only one proper to be presented to the very young pupil. This is the *perceptive* phase of his study. It must follow that if

a subject present no opportunity for such a phase, it is not an appropriate one for the study of the very young.

Afterward is needed a more minute and detailed investigation which will decidedly tax the earlier powers of the understanding, and which will give to the *analytic* phase its special character.

Lastly, the reasoning powers are mainly addressed; for the facts or phenomena with which the student deals, must be viewed in their mutual relation and combined action. This is the *synthetic* phase.

Subjects which do not present material for all these phases can be profitably studied only in particular stages of the mind's growth, while those in which all are found furnish suitable food for it at every step of its onward progress.

II. *Nature of the subject.*—We come now to the second part of our problem, viz.: to determine the nature of the subject and the general plan of treatment growing out of that nature.

"Geography," in the language of Professor Guyot, "is the *Science of the Globe*, considered, not as a mere aggregation of unrelated parts, but as an *organized whole*, formed of members, each having an individual character and special functions, all mutually dependent and operating together, according to laws established by the Creator, to perform functions possible to no one alone."

If this be the case,—if the globe is to be considered as a magnificent mechanism, prepared by the Creator with a special form, and a special character and arrangement of parts or members, in order to produce a given result,—then the study of it is to be conducted on precisely the same general plan as that of any other individual organization of which we desire to ascertain the conformation, the laws of its operation, and its adaptedness to produce the result intended.

First is required a general view of the whole, in order to ascertain its figure, the parts or members of which it is composed,—their arrangement, not only absolutely in the whole, but relatively or in regard to each other,—their comparative size, and the general conformation of each.

Second.—Each of these individuals is to

be made the subject of special, detailed study, in order to ascertain its particular organization,—the character, arrangement, and relation of its several portions,—the character of the whole individual resulting therefrom,—and finally the phenomena of life associated with it, whether vegetable, animal, or that of man considered both ethnologically and in the social capacity of states or nations.

Third.—Having ascertained the individual character of the several members, we look at them again in combination, in order to ascertain the influence which each by its peculiar character exerts upon the others, thus to determine its function in the whole mechanism and to arrive at a knowledge of the laws which govern the organization of the latter. Then referring to the history of mankind, we trace the operation of those laws on his character and destiny, and ascertain the adaptedness of this wonderful mechanism, to the end for which it was created, the education of the human race.

In the first, we find the perceptive phase of the study, since, by the use of the globe, of *accurate physical maps*, and of good illustrations, it can be presented almost wholly to the perceptive faculties. The second is the analytic, and the third the synthetic phase.

What subject so rich in material for the growth of the mind! What other science furnishes appropriate food, alike to the sunny-haired child of ten summers, and to the grave philosopher, whose head droops with the accumulated knowledge of "three score years and ten!"

III. Special methods.—In considering this part of the question we shall confine our attention to the first, or perceptive phase, since, the right stand-point being taken and the right direction given to study, if the final end to be attained be kept in view, there can hardly be, in the subsequent investigation of the subject, any serious departure from the correct course.

It must be borne in mind that we have here to confine ourselves mainly to what the child can, with proper representations, discover for himself. So long as this idea is adhered to, we are in no danger of giving him what is beyond his comprehension.

The only caution needed will be, not to go so much into detail as to diminish the prominence of the great characteristic features of the object studied. These must always be kept perfectly distinct.

Whatever appeals are made to the understanding must be exceedingly simple, the reasoning always being based on phenomena which the child has actually observed, and there must not be too many steps, or successive conclusions, between the premises and the final one.

We must be careful, also, to see that, whether in the study of the whole globe or the general view of the individual continents, due prominence is given to such of the points considered, as are characteristic, and become, therefore, the cause of important conditions or phenomena to be afterward studied.

Keeping in mind the nature of the superstructure to be erected, we must so lay the foundation that each successive portion as it rises shall find its support already prepared; and when, at length, the great vault shall be spread, every pier, every pedestal, every column, and every arch, shall be found in its proper position, bearing its appointed share of weight, having its own appropriate decorations and receiving its just meed of honor.

We must first fix the child's attention on the form of the earth, and the distribution of the land-masses and oceans. In this, the globe is the subject of examination, the child being told, that, so far as our knowledge extends, it is an accurate representation of the earth. Henceforth it is to him as though he were examining the earth itself, and he proceeds to the pleasing task of interrogating it, until he has acquired whatever it is able to teach him of itself.

After having noticed and described its form, his attention is to be directed to the position of the lands, they being the fixed body around which the mobile portions arrange themselves. He is to notice the arrangement of the lands in two worlds, of unequal size, on opposite sides of the globe, the compact body of the Old World, and the elongated form of the New,—the massing of all the lands toward the North, and their divergence toward the South in three different bands,—and the consequent con-

verse position and arrangement of the oceans. This is not to be merely a casual notice. The most careful attention is to be given to all these points, because on these forms and arrangements of the land-masses depend those great climatic phenomena which determine the conditions of life on the several continents, and which will, in subsequent study, demand his investigation. We thus furnish him the cornerstone for the temple he is beginning to rear. As these several facts are discovered by the pupil he must invariably be required to state them clearly, in his own language, the teacher only correcting such grammatical errors as he may commit, or supplying such new terms as will enable him to express his idea in a more clear and concise manner.

He next proceeds to notice the breaking, by the sea, of the three bands in which the lands are dispersed toward the South, and the consequent formation of six great masses, which he is told are called continents;—the smaller bodies, here and there, called islands,—the parts of the continents nearly cut off from the main body, called peninsulas,—the three great divisions of the sea lying in basins among the continents, called oceans, &c.

This is to be continued until the pupil has discovered, and is able to describe the different divisions of land and water which appear on the globe, and, wherever it was possible, has found their counterpart in nature. Thus, by the intelligent use of his own eyes, that part of Geography which is usually committed to memory from his text-book, often amid sobs and tears, and which is almost immediately forgotten because, to him, unmeaning, has become an imperishable part of his mind; and the descriptions, instead of being merely a burden to the memory, have been the means of enlarging his power of expressing ideas, and therefore of receiving them from others.

He is now ready to begin his study of the general conformation of the continents. In order to do this he needs the intelligent use of certain terms to express differences in the land-surface of the continents, and in the forms of their internal waters; as mountain-range, plateau, plain, river, lake, etc.

Ideas of these are to be obtained by him by an examination of the natural object, if within reach; or, if not accessible to him, good pictures of these several forms will suffice, and from them he will form his own definitions.

In entering upon the study of the continents it will be necessary to transfer the pupil from the globe to the *physical* map. He has but to be made acquainted with the conventional methods of representing the different varieties of land surface, and internal waters, which he has been studying, and he is ready to conduct his own study of the continent just as he previously did that of the globe.

As many different points will now require notice, it is indispensable that we endeavor to ascertain the logical order in which to present them, that is, the order of their successive dependence. To do this let us select any single point, as that of climate, and inquire by what is it influenced, and what does it control.

The most general influence bearing upon the climate of a continent is the position of the latter on the globe, by which it is exposed to the more or less direct rays of the sun. Next is its contour,—determining the position in which the sea winds strike it,—and the position of its great lines of elevation, whether so as freely to admit these winds, or entirely to shut them out from the main body. The character of the surface also determines the form and distribution of the internal waters, and this in turn modifies the healthfulness of the climate in different portions. The study of these points then, properly, should precede that of the climate, in order that when it is taken up the child may not be obliged to remember the facts concerning it as mere isolated statements, but being led by a simple association of the phenomena with its cause (the philosophic relation, in its full extent, cannot, of course, be given him), he will have it stored in its proper niche, where it will always be found when demanded.

Again, on the soil and the climate depends the general character of the vegetation in different portions of the continent. On the vegetation depends the presence or absence of certain classes of animals which

subsist on vegetation. On the presence in different parts of the continent of such plants or animals as are necessary to his subsistence, depends the existence of man, if in an uncivilized condition; and the differences in the surface, soil, climate, and the distribution of vegetation, animals, and minerals, in the different portions, will necessarily give rise to different industries, different social conditions, and different degrees of advancement in the civilized state; that is, to differences in regard to the possibility of the presence of great nationalities in different portions of the continent.

If evidence is needed in relation to the influence of physical conditions on the industrial pursuits, and distribution of population, we have but to look at our own country.* In the North-east, the rough surface, the somewhat sterile soil, and the cold climate, make agriculture impracticable in the larger part of the country, while the abundant water-power, and the rich stores of coal and iron, make it the great workshop of the nation, and its fine harbors capable of receiving and sheltering the ships of all nations, make it also our commercial depot, nearly all the manufacturing and the foreign commerce of the country being carried on by that little corner north of the Potomac.

Again, the level surface making cultivation easy, the fertile soil, and the warm and moist climate producing a luxuriant vegetation, make the great plains of the interior and the South the nation's farm and garden, from which, were its resources fully developed, supplies might be drawn capable, one might almost say, of feeding the world, and, with the aid of the North-east, of clothing it. In these two regions are gathered almost the entire population of the country.

The great plateau of the Rocky Mountains, on the contrary, doomed, in almost every part, by its saline soil, and its want of moisture, to hopeless sterility, is incapable of supporting a population, and must have remained uninhabited but for the rich mineral treasures embosomed within

it. Its population, however numerous it may become, must be mainly confined to the single occupation of mining and will be dependent for daily bread upon the East, or the fertile valleys beyond the Sierra Nevada, which enjoy all the moisture that but for this great barrier would have been dispersed over the whole.

We find, therefore, growing out of the successive dependence, the following order of topics:

1. Position on the Globe.
2. Contour.
3. Surface.
4. Internal Waters.
5. Climate.
6. Vegetation.
7. Animals.
8. Races of People.
9. Distribution, industries, social organization, intellectual condition, and history of the civilized inhabitants.

The last, the distribution of man in the social capacity of states or nations, constitutes that department of the subject called Political Geography, the one which is usually first presented to the young, and, in fact, the only one presented to any extent.

This, it must be conceded, cannot be *intelligently* studied until a knowledge has been acquired of the physical conformation, the soil, the climate, the resulting vegetable, and associated animal life, which make the possibility of the presence of civilized states or nations in one part of the continent while they are absent from another. If the facts concerning their distribution be given the pupil, before he has any idea of these physical conditions which govern it, he may remember them, it is true, but they will be of little worth to him, because he does not receive them intelligently, as the result of causes with which he is familiar, and the influence of which even he can discover if his attention be directed to them,—but they are to him simply isolated facts to be remembered, awakening no thought and stimulating no further study.

We find, then, that this topic of political geography is properly to the analytical phase of the subject. It must, therefore, be very sparingly presented in the

* See the accompanying map, in which the differences in surface are indicated by difference in color.

perceptive portion. Only the *most prominent facts*, and such as are *most obviously and unmistakably traceable* to the great physical characteristics of the continents, can be presented; and even these must be given only *after* the preceding topics are thoroughly known, so that the pupil can himself trace the relation of the former to them.

In this study of the continents, accurate physical maps are *indispensable*, and, if possible, they should be entirely free from all lines or colors indicating arbitrary political divisions, as these can but mar the distinctness, and break the unity of the all-important physical features.

The child must be able to see only the divisions and limits which nature made, if he is to gain a correct idea of her work.

The first topic the child has already considered, in his examination of the globe, and it need simply be recalled. In the next three topics, which constitute the main work of this grade, the same general course is pursued as in studying the globe. That is, the child is to discover, by the use of his own eyes, what exists, and give correct expression to the facts which he discovers.

One very important addition is however to be made. The pupil must invariably construct maps of the country he is studying. When upon the contour, his map will show only the outline; when upon the surface, the mountains and other elevations must be added in their place; and when upon the internal waters, these must appear. In all these exercises the closest accuracy must be required.

There are several reasons why this drawing should be insisted on. First, it aids, by the closer and more minute observation required than is necessary to a simple description, to fix the physical features in the memory. Second, it affords a variety of exercise by means of which the attention can without weariness be kept on these all-important points for a greater length of time. Third, it cultivates a power of representation which will be invaluable to the pupil in future studies. ~~Finally, at no after period in his life~~ ~~he easily~~ ~~acquire facility in this~~ ~~relation as~~ ~~now, and be so easily~~ interested in the

many little details which are necessary to accuracy. He takes delight in examining the minute peculiarities of contour and relative position; and what the older pupil would neglect as unimportant and wearily stupid, the child of nine years considers worthy of the greatest attention and the most prolonged effort.

In studying the internal waters and the succeeding points, the reason begins to be a little exercised in noticing the relations of the one to the other, and of all to the surface. Great care should be taken, however, to present only the most simple and obvious of these relations, such as the pupil of ordinary capacity cannot fail to comprehend. For instance, the child is thoroughly acquainted with the surface of North America. He knows of the great plateau in the western part of the United States, and of the high, unbroken wall of the Sierra Nevada, which borders it. He is told that the Pacific coasts and valleys have a fine warm climate while the upper part of this great wall is very cold. He sees by the rivers that on the side toward the sea there must be abundant rains, while the other side is almost destitute of water.

He has noticed many times in his mother's kitchen that vapor rises from water abundantly when it is warmed, and that when this vapor comes in contact with the cold window-pane it is at once changed into water. Now if he is told that winds are constantly blowing on this part of the continent from the warm Pacific, will he not, if that simple phenomena be recalled to his attention, at once see that the moisture which these winds bring from the ocean will be taken from them when they strike the cold Sierra Nevada, and will fall in abundant rains on the outer slope, while the inner receives little or none? Remembering then the position of the mountain wall, can he ever forget these peculiarities of climate? Again, he has learned by experience in his garden that plants require, in order to their growth, both warmth and moisture. Knowing these differences in climate, will he fail to remember the differences in vegetation which he himself will discover depend on that? He knows, also, that there are certain occupations, as agriculture and grazing, which depend on

the growth of plants. He will therefore be prepared to find that the one part is eminently fitted for these occupations, and the other either not at all so, or to a very limited extent. He thus gets his first insight, a very limited one it is true, into the relations of the physical conformation of a region to its fitness to be the dwelling-place of man. We find, therefore, as before stated, the necessity that he should first be made thoroughly acquainted with these forms. If this is done, it will become impossible for him to forget the subsequent facts, which he sees to be so intimately dependent upon them.

We are aware that the ideas here advanced are diametrically opposed to the generally received notions as to the proper presentation of this subject to the young, and that if acted upon, they must produce an entire revolution in our methods of teaching Geography.

We trust it has been made evident to the reader that, if we are to proceed on philosophic principles, the old plan of giving the pupil long lists of names, and collections of facts in regard to political geography, as his first work in this subject, must be set aside, and he must, in the outset, be introduced to the globe in its physical conformation and conditions.

Years of experience have convinced the writer that if the general plan here indicated be pursued, we shall no longer hear

the complaint so often made by teachers that the children do not learn their geography lessons; are not interested in them, and do not remember them.

The text-book so often disliked and neglected by the pupil, will become (if properly arranged) but the summary of his own thoughts, a convenient memorandum of facts and relations, most of which he has himself discovered, to which he will always turn with interest and pleasure. The few details given in regard to such points as are beyond the range of his investigation, will, as he finds them in their relation to such points as he could investigate, confirming the justness of his own conclusions, be perused with never-wearying delight.

When the general course here indicated has been pursued in each of the six continents, and a general view is had of the conformation of the oceans, the main work of the perceptive course is done. The child is now thoroughly prepared to enter upon the analytic course in which he is no longer confined mainly to the study of general forms, but the detailed modifications of these forms are carefully considered, and a great store of facts acquired in regard to the life of the vegetation, animals, man and nations associated with them, and he is constantly employing his reasoning powers to trace the relation of these facts to the physical conditions with which they are associated.

THE MAGNET.

THE remarkable power of the magnet to attract small pieces of iron, was recognized as a wonderful natural phenomenon for centuries before the Christian era; and the development of this power to a more extended usefulness to mankind has been an object earnestly sought for in all ages. Already it has been applied to uses which have spread manifold blessings to mankind; and every invention in magnetism is one more step towards the full development of the treasures which are still held within its iron grasp.

The natural magnet is a metallic body capable of attracting iron and other metals.

The power of attracting iron was first observed, by the ancients, in an iron ore obtained from Magnesia, in Lydia, from which circumstance it is supposed the term Magnetism is derived. More recently the ore was called load-stone, or leading-stone. Great quantities of this mineral were formerly found in India and Ethiopia, and it is now found in great abundance in China, in the iron mines of Sweden, and in this country. Tiger Island, at the mouth of the Canton river in China, is composed almost entirely of this mineral; and so great is the magnetic power of this island that it affects the magnetic compasses of passing

navigators. Magnetic iron ore is found in large quantities in New Jersey.

The ancients believed the load-stone to be of two species, male and female. It was used medicinally in the middle ages; and even in modern times "magnetic" salves and plasters are advertised and sold. The ancient Greeks believed that the discovery of the magnet was accidentally made by one Magnes, a shepherd, while leading his flocks to Mount Ida. Stretching himself upon the green sward, to take repose, he left his crook, the upper part of which was made of iron, leaning against a large stone. When he awoke and arose to depart, he attempted to take up his crook, when, to his surprise, he found that the iron firmly adhered to the stone. He imparted this fact to some philosophers of the day, and they called the stone after the name of the shepherd, *Magnes*, the *Magnet*, which it retains to the present day. Among many nations, however, it is named the *love-stone*, from its apparent affection for iron. The Chinese have a tradition of a Magnetic Mountain, rising in the midst of the sea. The power of this immense load-stone is so great that the nails and iron fastenings of passing ships are drawn from their places with great violence, and the ship falls to pieces. Not only does this tradition exist in China, but it is very generally known throughout the various people and tribes of Asia. The Chinese historians locate this magnetic mountain in Tchang-hai, the southern sea, between Tunkin and Cochin China, which is precisely the same geographical region designated by the author of Sinbad the Sailor, in his description of the wonderful load-stone, discovered in one of the marvellous voyages of his hero. This curious fact confirms the oriental origin of a great number of the half true, half fictitious tales which are so universally diffused through the literature of all languages, as to seem to belong to each of them.

Magnetic and electric forces are so intimately allied, that it is nearly impossible to consider the operations of either separately. The fact that amber, when rubbed, acquires the property of temporarily attracting light objects, was familiar to the philosophers of ancient Greece. The founda-

tion of electrical science, however, was laid by Gilbert, about 260 years ago; and the first electrical machines were contrived by Otto de Guericker and Hauksbee. It had likewise frequently been noticed by nautical men, that after a ship had been struck by lightning, the compass was deranged, or its poles were reversed; but the true connection between magnetism and electricity was not made clearly apparent until the year 1819, when Oersted published his memorable discovery, that a magnetic needle hung freely at its centre, would assume a position at right angles to a wire transmitting a current of electricity. The means of producing powerful temporary magnets, by passing currents of electricity through wires coiled around masses of soft iron, were speedily devised. The method of preparing electro-magnets was discovered, and the dependence of magnetism on electricity in motion, was shown. This great chain of discovery was completed in 1831, by Faraday, who announced that a current of electricity might be obtained in a closed conducting wire from the magnet by moving it across the face of the conductor.

It will be remembered that last month we noticed an important invention by which globes were magnetized, and to their surfaces magnetic objects, representing the races of men, animals, light-houses, etc., with profiles by Guyot, marking the relative elevation of surfaces, were attached at will, thus making a great improvement in teaching geography. The magnets on which these objects are mounted, possess a greater proportion of attractive force than larger magnets. This property is found to exist both in natural and artificial magnets. The magnet worn by Sir Isaac Newton, in his ring, weighed only three grains, while it was able to sustain seven hundred and forty-six times its own weight; but magnets weighing above two pounds seldom lift more than five or six times their own weight. We are not aware that this has ever been clearly explained. Indeed, numerous phenomena connected with magnetism are as yet without satisfactory elucidation, and are waiting for the discovery of facts in other departments of study which in turn will bear upon them.

THE ENGLISH LANGUAGE BEFORE CHAUCER.

AN interesting paper upon this subject was read before the London College of Preceptors recently, by its author, Mr. Morris. The lecturer, after treating upon the importance of a systematic study of languages, how it developed and disciplined the mental faculties, and produced clearness of thought and facility of expression, true to his early teachings, assigned the highest place to the Greek and Latin. Admitting the English, for the same purpose, to the highest place among modern languages, he considered a study of its various phases to be a duty as well as an advantage. He remarked, that in spite of its many changes, in all its various forms, it is still the English language, whether we study it in the works of Cædman, Alfred, Layamon, Chaucer, or Orme. The technical terms Anglo-Saxon, Semi-Saxon, Early English, etc., are highly useful, inasmuch as they serve to mark distinctly great historical periods. It is to the Anglo-Saxon, to English, in its most primitive form, that we must turn, if we would rightly understand such grammatical inflections as are still preserved, if we would possess a more intimate knowledge of the meanings of words than is to be obtained from grammars and dictionaries.

It is often taken for granted that we have been gainers by the introduction of the Romance element into our language. It has been assumed, too, that in the older stages of the language there was a paucity of words, a great lack of terms fully adequate to the expression of all our ideas. This is a very erroneous notion of the capacity and capabilities of our mother tongue. Sharon Turner has shown that the Anglo-Saxon possesses a power of derivation and extension not at all inferior to that seen in the languages of Greece and Rome.

Thus, to take our English word *mood*. In Anglo-Saxon it is *mod*. From it we have the word *modian*, to be angry; the adjective *modig*, irritable, proud, equal to the modern word *moody*; *modful*, full of mind, irritable; *modga*, elated; *modwehata*, fervid, zealous; *modilic*, magnanimous; *modleas*, pusillanimous; *modstathal*, firm-

minded; *modthwor*, meek-minded. As secondary nouns, we have *mod-gethane*, thoughts of the mind; *mod-gewinne*, conflicts of mind, reasoning, etc.

Next take *wit* (*ge-wit*), mind, genius, sense, intellect, wisdom. Compare the phrases, "Out of one's wits," "the five *wits* (senses)." *Wita*, wise, skillful; *witan*, to know, perceive = our "to wit;" *gewitan*, to understand; *witegian*, to prophesy; *wittig*, wise, skilled = our "witty;" *ge-wittig*, knowing; *gewitleas*, ignorant, foolish = "witless;" *gewitseoc*, sick in mind, demoniac; *witol*, wise (hence the old English *witter*, wise; *witful*, intelligent; *wytter*, to inform); *witedom*, prediction; *witega*, prophet; *witegung*, prophecy; *witesaga*, a prophet; *gewitleast*, folly; *gewitnesse*, witness; *witsord*, the answer of the wise; *gewitseocnesse*, insanity; *witolnesse*, *witedomlic*, prophetic; *witendlice*, knowingly, "wittingly."

Not only in Anglo-Saxon do we find this fulness in the vocabulary, but also in later periods of the language, when it had been influenced by Norman-French. Thus, in works of the fourteenth century, we find *aboutstanding*, circumstance; *bochouse*, library; *bodworde*, message; *brethe* (breath), vapors, steam; *fore-speech*, preface; *fus*, diligent; *ingoing*, commencement; *medeful*, meritorious; *overdoing*, excess; *overveening*, presumption; *spedful*, prosperous; *sty*, ascend—hence, *stair*, *stirrup*, *stile*, etc.; *ugly*, horrid (from *ugg*, to fear, terrify, and hence *huge*); *unlered*, ignorant; *workful*, active; *wytful*, intelligent, etc.

In our old writers of the fourteenth century we find no lack of expressive terms. It was rich, too, in synonymous words. In an old English work, written about A. D. 1320–1330, we find no less than eleven words for *man*. Among them we have *knape* and *schalk*, still surviving in *knave* and *marshal*.

Many of our most common words are not easily explained without reference to their older forms. Thus, to take the word *spell*, to name the elements composing a word. How is it connected with *spell*, a

charm? The Anglo-Saxon *spellian*, to proclaim, tell, explains the meaning and connexion of both.

A preacher in ancient times would be described as a *beadle*, *spelling* from a steeple. *Beadle* originally signified a messenger, and was equally applicable to an angel or to a man.

Aloft is connected with old English *lift* or *loft*, the firmament. *Loom* originally meant an instrument of any kind. It was applied to a sword and a club, which were called play *looms*. The ark, in old writers, is frequently called a *loom* (and even a *hutch*); subsequently the word *loom* designated the most important of ancient domestic furniture, which became handed down from father to son. Hence we can easily explain its meaning in heir-*loom*. *Tool*, in the same way, stood for a sword, which would be called a *grim tool*.

Sly and *sleight* are instructive words. In old English, *sly* (*sleghe*) signifies *wise*, and *sleight* (sleight) = wisdom. They are connected with the German *schlecht*, bad, which originally meant wise, good, etc.

The lecturer showed that the word *time*, in the expression "I have no *time*," was not the ordinary word *time* (Latin *tempus*), but represented the Latin *otium*. In old English it was written *tome*, and not only signified leisure, but *empty*, like the Scotch *toom*. *Empty* originally signified *leisure*.

Callow, as applied to unfledged birds = Anglo-Saxon *calo*, bald. In Kent a bat is called a *callow-mouse*. A house exposed to bleak winds is said to lie *callow*. In an old poem of the fourteenth century, containing the life of St. Dunstan, we are told that the saint seized the devil by the nose with his hot tongue; the pain sent the fiend flying through the air, exclaiming, "What hath the *callow* (*calewe*) done! what hath the *callow* done!" i. e., "what has the bald pate done!"

We must not expect to get a full and satisfactory account of English words from Etymological Dictionaries, or select Glossaries, which are all exceedingly useful as works of reference. We must go for the sources of information to our old writers themselves, in whom we may place implicit trust.

The intention of the lecturer was not so

much to dwell upon the origin and history of words, as upon the early English dialects.

In the fourteenth century (and, of course, long before), Englishmen wrote books for the instruction of the *lewd* in the dialect which prevailed in their own locality. All our early works have thus a provincial cast. The English of the North differed from the English of the South, and Midland English from both. But old English authors, no matter what dialect they employed, thought themselves justly entitled to call it *English*. Even Scotch writers knew no other term for their good old tongue. Whatever may have been the varieties of the *old* provincial dialects prevailing in the fourteenth century, they were all called English, and each had something to do in the formation of our language as it has come down to us at the present time.

By the help of a map the lecturer showed the geographical distribution of the old English dialects—the Northumbrian, the Southern, the Midland, together with its varieties, the East and West Midland forms of speech. Some curious points of difference between the Northern and Southern dialects were remarked upon. The Northern dialect preferred the *k* sound to that of *ch*. Hence the double forms, *dike* and *ditch*, *kirk* and *church*, *churl* and the Scotch *carl*, *crook* and *crutch*, *sack* and *satchel* (a little sack originally), *wed-lock* (or *wed-layk*, or *wed lak*), and *know-ledge* (or *know-lach*); the *-lock* and the *-ledge* being the *hard* and *soft* forms of the old English *-lac* or *-layk*. Many grammatical peculiarities were alluded to and explained.

1. The *n* in "for the *nonce*," was shown to be a part of the article; the old form being "for *than anes*."

2. *That*, now a demonstrative pronoun, was, as late as 1850, the neuter of the definite article in the Southern dialect.

3. The word *day*, in the phrase "rested the seventh *day*," etc., was clearly shown to be the *accusative*. In the thirteenth century the phrase would be written, "restede *thane* seventh *day*," etc., *than* being the accusative of the article definite.

4. The double forms *tithe* and *tenth* were explained. The Southern numerals *seveneth*, etc., of the fourteenth century, ended,

as in Anglo-Saxon, in *-the*, no *n* appearing in them. The Northern ones, borrowed from the Danish, ended in *na*; thus the Southern *tithe* would be written *tead*. The Midland dialects at first used the Southern forms, but ultimately adopted the Northern terms, changing the *d* to *th*, saying, *seventh*, *ninth*, instead of *sevoth* or *sevend*, *nithe* or *neghend* or *nind*.

5. The pronominal forms, *I*, *she*, *they*, *their*, *them*, *ours*, *yours*, etc., were examined, and shown to have been originally confined to the Northern dialect.

6. Many peculiarities of our verbal inflexions were noticed and explained, such as the *s* and *eth*, in the third person singular indicative. The double forms *spake* and *spoke*; the presence of *n* in *given* and *stolen*, and its absence in *found*, *run*, etc., originally *founden*, *runnen*, etc., were examined.

The comments made by leading minds among the listeners to Mr. Morris's essay, were generally favorable. Among these, Professor Heimann said that not a few of the lecturer's explanations of difficult English words threw a light on obscure terms in the German language. There could, indeed, be no doubt that a careful study of the earlier forms of the various English dialects would yield a rich philological harvest, and enable us to understand thoroughly many points of syntax, as well as of mere etymology, which have hitherto been the opprobria of both English and German grammarians.

Another gentleman (Mr. Watson) suggested that Mr. Morris would, on some future occasion, favor the members of the college with another lecture, devoted to the comparison of antique principles of construction with the corresponding modern rules. He believed that in this way many apparent anomalies would be shown to be perfectly regular; and that satisfactory reasons would thus be discovered for not a few peculiarities of our language which are commonly supposed to be inexplicable. Mr. Watson said that he had himself paid some attention to the Scandinavian dialects; and was convinced that an accurate study of them would furnish valuable materials for the illustration and elucidation of the older forms of our own

language, and, through them, of modern English.

Mr. Robson said that, interesting as were the illustrative details of Mr. Morris's admirable lecture, its chief merit, in his opinion, was that it showed the true, the rational principles on which the study of language should be conducted. Language being not a purely scientific device, but an instrument for the expression of popular thought and feeling, as well as of the ideas and conceptions of learned men, and being subject to constant change and extension, must be studied historically, if we wished to possess more than a superficial knowledge of it; and such a study demonstrated the unsoundness of the notion, still far too prevalent, that language is, to a great extent, arbitrary and accidental. This mistaken view was incompatible with accurate or useful philology; and hence whatever tended to weaken the influence of the former, must promote the spread of the latter. For this reason especially the labors of such men as Mr. Morris, in the field of our oldest native literature, were extremely valuable, and deserving of every encouragement; and the speaker expressed his hope that they would be persevered in until every portion of that field had been thoroughly explored.

The chairman, Dr. Hodgson, said that, fully concurring with Mr. Robson in his high estimate of the value of the Lecture with which they had that evening been favored, he could not allow the discussion to close without making a few remarks on one or two points on which he did not altogether agree with Mr. Morris. The lecturer had, he thought, carried too far the analogy between the growth of language and of an animal. So far as their origin and development were concerned, the two things might fairly enough be compared; but Dr. Hodgson could not admit that languages, like animals, must necessarily suffer decay and extinction. Many languages may, no doubt, be pointed at as illustrations of such a destiny: Latin and Greek are *dead* languages; but he saw no reason for supposing that English, French, and other cultivated modern languages will ever cease to be living vehicles of thought. The speaker said that he must also dissent from Mr. Morris's

statement that the classical languages are the most perfect that have ever existed. Such a doctrine, sanctioned though it is by the general voice of scholars, is at variance with the great law of human progress, which must surely apply to language, the principal medium for the expression of thought and feeling. Leaving these general considerations, Dr. Hodgson proceeded to comment on some of the details of the Lecture. Mr. Morris had mentioned that the terms Scotch and English were, in early literature, often confounded; and the map which illustrates his Lecture accounted for this, by showing that Northumbria included the greater part of the lowlands

of Scotland; so that, in fact, the distinction between English and Scotch, in the modern sense of the terms, did not then exist. The dialect which is now popularly called Scotch, is nothing more than the remains of old English. It had for some time been known that our grammarians were entirely wrong in the account they have given of the article *a* and *an*; and the examples of this word quoted by Mr. Morris rendered this somewhat important point indisputable. A precisely similar case was that of the Greek *av*, which sometimes assumes the form *a*. The whole paper displayed a masterly grasp of details, such as only a knowledge of principles could confer.

RUDIMENTAL MUSIC;

WITH A NOTICE OF SOME ERRORS IN TEACHING IT.

III.

THERE is a chromatic prefix, #, called a Sharp, placed exactly on the same line or space which the note affected by it occupies. This sharp indicates that the note after it does no longer correspond with the usual key, but with the one immediately adjoining it above, or short: the sharp makes a note one key higher.

The Flat, b, is a chromatic prefix making a note one key lower.

The Natural, ♮, is the third chromatic prefix, occurring only after a note has been sharpened, which note is to represent again the usual key.

The origin of these terms I cannot divine, but I especially protest against the term "natural," since sharps and flats are as natural in music as naturals can possibly be. Some have proposed "neutralizing sign." I think any other reasonable term is better.

Double flats, bb, make a note two keys lower.

Double sharps, x, make a note two keys higher.

The double sharp is reduced to the power of a single sharp by ♯♯, and the double flat to the power of a single flat by bb.

These prefixes affect not only the note or notes before which they are written, but also their octaves in most cases. But when they are written in front of each staff, they are called *Chromatic Signatures*, and not only affect like the others the note and its octave in one measure, but throughout the piece, unless a new chromatic signature should be introduced.

It is wrong to leave beginners under the impression that sharpened or flattened notes represent the short or black keys. Neither *c* sharp and *b* sharp, nor *c* flat and *f* flat, are short keys.

It is also wrong to call those prefixes, written immediately before the notes, "accidentals." They are no more accidentals than those in the signature. There is nothing in music deserving the epithet "accidental," except mistakes; all else is there on purpose, and not by accident.

The most important defects found in Instruction-books for the Piano are the following:

1. *A want of exercises to render both hands independent of each other.*—The habits acquired and constantly encouraged by the daily occupations of the hands and

fingers, create a powerful sympathy between them, which ought to be as constantly counteracted by numerous and appropriate exercises. But such exercises are either very scarce or entirely omitted. It is true, the efficient and experienced teacher will know how to turn any exercise to this and various other uses, but an efficient teacher will use none of the Instruction-books now extant, for he teaches his pupils to compose their own exercises. He who really needs an Instruction-book, the inefficient, the inexperienced teacher, is overlooked, uncared for.

2. *A want of exercises for "legato" and "staccato" playing.*—In most Instruction-books this subject is spoken of *en passant*, but no attention is paid to it in the exercises. Considering what was said above, viz., that only inefficient teachers need Instruction-books, it is a serious defect.

3. *A want of exercises for the use of the pedals.*—This is a subject scarcely attended to in the best Instruction-books, nor does it seem to be much attended to by teachers in general. The abuse of the Pedals arises, however, principally from the names usually given to them. What does "loud or strong" Pedal mean but that the Pedal is to be used when the player wishes to play "loud or strong?" Were they called Right, Middle, and Left Pedal, the pupil would stop and think or inquire, What is their use?

4. *A want of dynamic exercises.*—A few of these exercises are deemed sufficient by authors of Instruction-books. I agree with them, when the pupil has an efficient teacher,—if he has not, several hundred of such exercises are hardly sufficient.

5. *A want of exercises in the different keys.*—The so called five-finger exercises are written exclusively in the key of C. Authors will say, the efficient teacher will transpose these into the other keys: but if he has to do this, would it not be as well for him to write an Instruction-book at once for his use?

6. *Too much science is crammed into Instruction-books.*—The study of the Science of music is a matter quite different from learning to read music. We all used to learn to speak and read before we studied Grammar, and we, when we were chil-

dren, would have been greatly puzzled, if our mothers had then told us, while learning to call a certain animal "ox," that it is a noun, masculine gender, and its plural is "oxen." Let authors and teachers avoid every technical term not indispensable, and every term positively necessary for elementary instruction should be plain English, not Italian, German, or French. It is time enough for a pupil to study the Science of music when he can read at sight, and write at least from memory or dictation.

A science consists simply of technical terms, with their definitions systematically arranged, and principles proved by facts, a knowledge of which was previously acquired by elementary study. This shows what elementary instruction has to give to the pupil.

7. *A want of a proper exposition of the rules for fingering.*—Beyond a half dozen (more or less) of general rules for proper fingering, both the teacher and scholar are left in the dark as to the acquisition of a correct fingering. Not a single author, to my knowledge, has said more on this subject, nor was it even hinted at, that the exercises contain the rules for fingering. On the other hand, authors and teachers have been endeavoring to compensate for this deficiency by writing the proper fingering above the notes of every exercise, study, or piece of music intended for beginners. This, it must be admitted, accomplishes its object as far as each exercise, study, or piece, and also as far as the teacher's indolence and the scholar's ignorance are concerned, for it saves a great deal of thinking and talking about rules, and renders exercises nearly useless.

8. *The improper selection of pieces of music and studies.*—That this is a subject for just complaint, authors are silently admitting, for some of our so-called standard Piano Instruction-books can be bought with or without the selection, abridged or unabridged. Pieces or studies can be selected for the pupil only by his teacher. There are so many considerations by which a teacher selects (the scholar's talents, time for practice, ability, age, application, taste, etc.), that it seems impossible for any one else to select by mere progress.

9. *The total omission of a method to*

teach the pupil to write music from dictation and memory.—There is no exercise better calculated to improve both the beginner and advanced scholar in reading at sight, than this branch of rudimental music, but this is not the only advantage drawn from it. A player who is able to write music, is also properly prepared to study the science of his art, and that great bugbear "playing by ear," if a pupil indulges at all in it, is turned into its proper channel, for if the pupil learns to write music, he is so much better able both to write and to play by ear—correctly. But since writing cannot be taught without a sufficient skill in Vocal Music, I consider:

10. *The Defect of Piano Instruction-books.*—How teachers can teach songs with piano accompaniments, without previously instructing their scholars in vocal music, has always been a mystery to me, and still, I know, it is done by teachers acknowledged to be superior. It certainly must be a laborious and thankless task, to say nothing of the neglect of the educational principle, that nothing should be taught mechanically. Why not teach singing and playing the Piano simultaneously? or, if teachers do not know how to do this, then in alternate lessons?

11. *The want of a method to teach transposing a piece of music into other keys.*—The ability thus to "transpose" is especially necessary for singers when songs are not published for their compass of voice, and for score players and others who wish to accompany instruments not in tune with the Piano.

12. *Instruction-books are any thing but complimentary to a good music teacher.*—Read them from beginning to end, and we find that a music teacher is to know positively nothing of his business. Every thing he has to say or to explain, he finds there stereotyped. As the author has in many cases piously repeated what his predecessors from time immemorial have said, so also the teacher is expected to repeat to his scholars all that learning and all those incongruities in exactly the same terms. Not only the fingering for every note is conscientiously marked above or below it, but marks are made everywhere to arrest the scholar's attention (probably because

the teacher is imagined to be an ignoramus or asleep) whenever he (the scholar) is thought to be in danger of making a mistake, and learned explanations fill the margins. For indolent and ignorant teachers, this is an excellent plan, but for an efficient teacher—if he does not feel like throwing such an Instruction-book out of the window, it is simply because he does not see the insult offered him, or because the book is not his own.

The case would be different, if authors would confine themselves to writing Instruction-books for beginners in the art and science of teaching music, or for such teachers as wish to improve themselves in their profession, or for those who wish to learn to play the Piano without a master, if there should be any foolish enough to consider this a possibility; or to writing elementary exercises similar to those of Czerny, Herz, Knorr, etc., or reading lessons and studies similar to those of Czerny, Herz, Burgmüller, Abt, etc. (but by all means without fingering), thereby assisting the good teacher and depriving the indolent and ignorant one of the chance of imposing on the public.

The demands I make for a good and complete Instruction-book for the Piano are, I know, so numerous and extensive, that it would give it a size so large as to make it unwieldy. But I do not demand Instruction-books for scholars. A scholar has in his teacher all the instruction-books he needs. Whatever he needs, his teacher will give him in exactly such terms and words as he will understand, and whatever printed matter is required, his teacher will select. It is, therefore, of the utmost necessity that the teacher be well informed and initiated into all the difficulties of his profession, hence that authors should write for teachers, not for scholars or for both in one book.

[The foregoing paper, the production of a thorough musician and skillful teacher, will commend itself by the soundness of its views, not merely to professors, but to lay readers who have children or wards to be taught. If there be those who dissent from its positions, which, in the main we endorse, we would be glad to hear from them.—EDITOR.]

THE NEW DICTIONARY.

THERE is a story about a fish vendor, who having boasted that she had a cousin who was a baluster at law, was put down by a rival, who claimed to be near akin to a corridor in the navy. The precedence of an entire corridor over a single baluster was not to be denied. The slight change by which the barrister and commodore were given a wooden character, was owing to a scarcity of dictionaries in that quarter. There is no excuse for the blunders of Dogberry and Mrs. Malaprop in these days. Dictionaries abound. They are losing their old character. A "royal quarto, unabridged," is becoming a piece of household furniture, as necessary as a sewing-machine, or that admirable contrivance, as yet unpatented, by which your true resident of remote rural districts extracts the secret purposes and hidden business from an unsuspecting traveller.

With all this abundance of authority and convenience of reference, there are many who doubt whether we have a dictionary among us. These be your irreverent literary Pagans, who profane the name of Webster, are infidels to Worcester, and deniers of the faith in Richardson. Their skepticism arises not so much from their own nature, as from the absence of a settled authority; and the absence of settled authority comes in a measure from the nature of our language itself.

There is no trouble about this matter in France. The true shape, pronunciation, office, and meaning of a word, are there prescribed by the powers that be. There is a general council of the Church Literary from whose decree there lies no appeal. There exists a French Academy, composed of those eminent in letters; and these are the word-wardens of the realm. Any vagabond word caught within the confines of the empire, is brought before this literary tribunal. If it be found to be an honest word, reputable and well-formed, to the manner born, or fit for naturalization, it receives a certificate of respectability which admits it at once into good society. If not, the unhappy new-comer is sent to Coventry, or the kingdom of Slang, and only ven-

tures, if he ever return, to move through by-places and alleys, or sneak into an obscure newspaper paragraph.

We have no such authority in the United States, nor are our cousins on the other side of the water better provided in that respect than we. It would be an impossibility. The nature of our language, however purists may protest, forbids it. The English tongue is composite—made up of words stolen from every language and dialect under the sun, grafted upon a Saxon stock; and its mixed origin makes it welcome every stranger that promises to be useful. Not content with voluntary emigration, it even kidnaps its victims, and afterwards exalts them to fellowship. Under these circumstances, general usage by the refined, or the endorsement of those eminent in letters, fix the position, and settle the meaning of words in our language. In either case, however, the dictionary is the mere register of authority. It is not the business of the lexicographer to settle what is proper or improper; but to inform the public what has been fixed on, by the competent power—in France, what the Academy has determined to be French, with the additions admitted by polite society; in England and the United States, what custom and the admitted masters of the language have decided to be English. When he goes beyond this, he usurps powers, and scholars will not submit to it. He must abandon his claims, or be dethroned.

The first dictionary of any note devoted solely to the English language, was that of Bailey, remarkable for the admission of words which are now disused by any but the most depraved. This merely paved the way for the more thorough work of Dr. Johnson, that appeared about thirty years after. The dictionaries of Buchanan and Peyton followed; and, in 1764, Joseph Nicoll Scott produced a revised edition of Bailey. The same year the works of Far- rar, Johnston, and Entick appeared,—the latter being considered the most scholarly,—and from that time down to 1791, fourteen more dictionaries entered the field,

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including those of Barclay, Ash, Perry, Sheridan, and Nares. None of these displaced Johnson. At length, in 1791, John Walker produced his "Critical Pronouncing Dictionary," which was at once accepted as standard authority in pronunciation, and its orthography generally acquiesced in. Other dictionaries, many of them mere alterations of Johnson or Walker, appeared from time to time, but none of these had particular merit, except that of Richardson, which, as an Etymological Dictionary, is without a peer, and is a necessary part of the library of the scholar.

It was reserved for the United States to bring forth a more copious and thorough lexicon than had appeared in England. In 1806, was first published, "The Compendious Dictionary of the English Language," by Noah Webster, which, in 1828, assumed a more perfect shape. The bold innovations proposed in the spelling and sound of words by the daring new-comer; his contemptuous disregard of the usages of the learned; and the industry and care displayed in the work as a whole, excited attention and controversy. Although the innovations met with no approbation among the scholarly, the work itself divided public favor generally, and prevailed in some sections over Walker, and remained in use, with little alteration, until 1847. A year previous to that, Dr. Worcester produced his "Universal and Critical Dictionary of the English Language." Following in its spelling and pronunciation the usage of the best scholars, and displaying learning and industry, it attracted attention and favor, and the publishers of Webster—the author being dead—obtained the services of Dr. Goodrich to revise and enlarge their work. The task was well done, and the rivalry between the two dictionaries heightened, until the appearance of the enlarged edition of Worcester, in 1859, caused a fierce war between the partisans of the respective publications. In this controversy, the Websterians had rather the weaker side. The result was, a determination on the part of the latter, to produce a work which should be the *ne plus ultra* of all dictionaries. Some of the ablest scholars of New England were pressed into service; their labors extended over

several years; and the result of all this lies upon our table.¹

To appreciate the merits and demerits of this new issue we must compare it with another; and that other, for evident reasons, must be Worcester.² It may seem unfair to the latter, for that book is older, and the new edition, if such there be in prospect, has not appeared; but we are obliged to take things as they are. To carry our comparison in detail through the whole of both works would occupy too much space. So far as the dictionary proper is concerned, a single letter will answer our purpose, and as the centre of a book is as good a place to dip in as any other, we will hastily glance over the list of words commencing with M.

The first thing that strikes us is the typographical appearance. This is decidedly in favor of Webster. In that work, the type for the words defined is lower-case, instead of the capitals used by Worcester, is bolder-faced than the rest, and exceedingly sharp and clear. The engravings introduced through the work—for Webster has followed the plan of Worcester in this respect—are better executed, as a general thing, though at times unnecessary.

In looking at the vocabulary, we find that M, or *em*, the unit of measurement in computing the amount of type in any given space, is omitted entirely by Worcester, although he admits other technicalities. Webster, however, omits *magazing*, for which he deserves credit. Had he also omitted *magaziner*, he would have deserved more. Worcester omits *Mahound* and *Macassar-oil*. Webster admits both, and appends to the latter the information that the oil was formerly obtained from Macassar, a district in the island of Celebes.⁽¹⁾ Both dictionaries omit *mitre-saw* among the compound words, although they give *mitre-box*; and they both ignore *mustafina* and *mestafina*, while they give *mustee* and *mestee*.

There is little, if any, difference in the

(1) THE AMERICAN DICTIONARY OF THE ENGLISH LANGUAGE. By NOAH WEBSTER, LL. D. Thoroughly Revised, and greatly enlarged and improved. By CHAUNCEY A. GOODRICH, D. D., LL. D., and NOAH PORTER, M. D. Springfield, Mass.: G. & C. Merriam. Quarto, pp. LXXII-1768.

(2) A DICTIONARY OF THE ENGLISH LANGUAGE. By JOSEPH E. WORCESTER, LL. D. Boston: Brewer & Tilton, Quarto, pp. LVIII-1768.

orthography, except that Webster transposes the *e* and *r* in *metre*, retaining the standard spelling as alternative; while Worcester follows the orthodox mode solely. In pronunciation, we note nothing particular except in the word *Magyar*, the first *a* in which Worcester pronounces like the short English letter, and the second like the *a* in *far*—an error which is gross and inexcusable. In the definitions, there is little difference, and when it exists the advantage is about even. Webster gives the meaning in the best way to *macadam-road* and to *maiden* (second definition), while the words with which Worcester defines *murble* and *missile* are preferable.

And now let us look at some of the peculiar faults of each of the two.

Under the head of *Marquess* and *Marquis*, both books are in error. Webster endorses *Marquis* as the English spelling, and quotes Smart, who says, that, "till of late, *marquis* was the usual spelling, but it is now to a great extent superseded by *marquess*, except in the foreign title." Worcester does the same, but rather inclines to *marquess*. The truth is, that the latter is the correct spelling, and the termination *quis* came into use in England during a period when Gallicism was a prevailing affectation. The original patent for the title, conferred by the second Richard on the Earl of Oxford, was "*Marquess*;" and the best scholars in England retained it through all the mutations of fashion. There is a wide distinction between the English and French titles, and there should be no question concerning the distinctive orthography of each.

Again, *may-apple* is defined by Worcester as "a plant with poisonous, drastic roots," and Webster, who gives a better definition, adds, "the leaves and root are employed in medicine, and are dangerously drastic." There is nothing definite in these. They remind us of the proposed French definition of *crab*—"a fish, of a red color, which swims backward." Submitted to Cuvier, he admitted the justice of the definition, except in three points. 1. The crab was not a fish; 2. It was not of a red color; and 3. It did not swim

backward. There are a number of plants with poisonous, drastic roots; but they are not all may-apples. May-apple is the vulgar name of the fruit of *Podophyllum peltatum*, and applied hence to the whole plant; but the roots, which are the parts employed in medicine (see Wood and Bache's Dispensatory, Art. "*Podophyllum*"); are not more "dangerously drastic" than many other roots used for similar purposes; and, indeed, in their ordinary dose, are not dangerous at all. As to their drastic nature, they do not possess it so much as gamboge or scammony. Yet of the first of these, Webster merely says, "it is a strong and harsh cathartic and emetic," and Worcester, that it is used in medicine "as a powerful purge;" while scammony is set down by Webster as "used in medicine as a cathartic," and Worcester gravely informs us, on the authority of the English Encyclopedia, that "it is an efficacious and powerful purgative." Powerful, quotha! We should think it was. Unfortunate *Podophyllum*, a sort of modified American jalap, is put under the surveillance of the police as a dangerous character, while happy Messrs. Gamboge and Scammony, distinguished foreigners, walk along without the least suspicion.

One more notice, and we have done with the letter M. Both Webster and Worcester introduce the barbarous vulgarism, *mizzle*, which should have been confined to the pages of Hotten and Matsell. Webster contents himself with giving the second meaning as "to take one's self off; to go (*Colloq.*);" but does not define the taking one's self off, another vulgarism with a double meaning. Worcester, for some private pique against the editor of the *Tribune*, gives his second definition thus—"2. To run away, to abscond. [*Low.*] *Greeley*." To use Mr. Greeley as good authority for a low word may be sarcastic; but it is a very improper piece of humor in a dictionary, on a par with the definition of *oats*, attributed to Dr. Johnson.

So far as we have run through and compared the two works, the present edition of Webster appears to be fuller and more complete in its vocabulary, and quite as satisfactory in its definitions as Worcester. Having followed Worcester in placing syno-

obliged to write out over and over again, as if time and labor expended in what may be termed visual speech were of no importance. Neither has our written character the advantage of distinctness to recommend it—it is only necessary to write such a word as 'minimum' or 'ammunition' to become aware of the want of sufficient difference between the letters we employ. I refrain from enlarging on this subject, because I conceive that it belongs to social more than to physical science, although the boundary which separates the two is sufficiently indistinct to permit of my alluding to it in the hope of procuring for it the attention which its importance deserves."

The subject is one which deserves attention. There is inventive genius enough in the country to devise a system, by which, without too much shock to our habits, contractions, abbreviations, and arbitrary signs, might replace prefixes, suffixes, and frequently recurring words. Something approaching to the old short-hand system would answer the purpose. It would save time, and frequently retain ideas, in the shape originally taken in the mind.

A BOOK WANTED.

AMONG the many texts books most needed in our schools, is one which shall clearly explain to the pupils the nature of the government under which we live—the relations of the State to the people—the powers and duties of the Federal government, and of those great municipalities which form the Union; and the views which animated the framers of the Federal Constitution. Such a work, if freed entirely from partisan bias—not by ignoring party, but giving fairly the views of differing statesmen, in plain and simple language,—would be readily understood by the more advanced pupils, and would be a valuable instrument in a course of thorough education. Such a work would be profitable to both author and publisher.

THE AUXILIARY HOME GOVERNMENT.

THE importance of assistance from the parents, in the instruction of children,

cannot be too strongly insisted upon. The heads of families rely upon the teacher entirely, in many cases. So far as the formula of instruction is concerned, they are right. But the lack of discipline at home affords frequently a strong bar to the ready receipt of instruction at school. The government of the school is patriarchal,—the teacher, during school-hours, stands *in loco parentis*,—a father as well as a pedagogue. But the parental government, singularly enough, closes upon the return of the child to his home. There he is very apt to rule. He is released from that kindly restraint, which is the surest preparative to his own era of legitimate command. The discipline of the school becomes irksome by contrast; and the time that should be used in earnestly endeavoring to acquire knowledge and comprehend the lessons given, is invaded by attempts to evade regulations or defy authority. The subject is an important one, and should receive careful consideration by the thoughtful parent.

A WORD IN SEASON.

IN a business communication sent to us by a respectable firm, we find the following sentence:

"We would like to occupy a large share of your advertising pages; but we expect a first-rate notice of the book."

We might as well take occasion to define our position in regard to this matter of "notices." Our advertising pages are open to the public, and any advertisements not improper in themselves, will be inserted therein at the established rate of compensation. If the firm referred to, which is well-acquainted with the extent of our circulation, and its nature, think it would pay to advertise, they will do so; if not, they will refrain. They are shrewd men, and know their own business. But our editorial pages, and our reviews, reflect our own opinions solely, and shall so continue to do. If a book, submitted to us for notice, possesses merit, we give it praise in

no stinted measure; and where it has faults, we shall not withhold our censure. Whether our opinions be right or wrong, our readers desire to have them in their integrity, and they shall not be disappointed. We shall be very well pleased

to have the advertisement and the book. The former will be properly inserted, and the latter receive just such notice as its merits or demerits deserve, and that in the plainest English at our command. "Only this, and nothing more."

EDITORIAL CORRESPONDENCE.

EDINBURGH, SCOTLAND, Dec. 12, 1864.

The Excellence of the Scottish Schools.—The Undemocratic Principle in them.—The George Heriot Schools.—Visit to One.—The Normal Schools.—Private Schools.—General Remarks on the Edinburgh Schools.—The University.—Shameful Scenes at the Opening of the Winter Session.—Sir David Brewster.

EDINBURGH is famed for its schools. And certainly not without reason, for in respect to the thorough preparation of the teachers, the excellence of the buildings and their appointments, and the manner in which instruction is imparted and stimulus given, not much is lacking in the Edinburgh schools. Their range is very great, extending from the infant-school to the University, thus opening wide the arms which welcome to any degree of proficiency in science. And yet, wide as is their compass, and thorough the system which they represent, they are all marred by what may be called the Feudal principle, or perhaps, more intelligibly still, the undemocratic principle. Not quite all, however, for the University must be excepted: a thoroughly democratic institution. But the class spirit is everywhere else dominant; to me, hatefully so; and, admirably managed as are the schools, yet the want of that blending of all the elements of society for the common good, which is the chief characteristic and the glory of our Union, is here so consciously and so painfully lacking, that much of the good is lost.

Beginning at the bottom in point of social prominence, we come to the George Heriot schools. Many of my readers remember "jingling Geordie," of the "Fortunes of Nigel," and some may be aware that that man, under his real name of George Heriot, left to his own beloved

Edinburgh a large sum of money for the education of needy children. The first fruit of his liberal gift was the Heriot Hospital, for the maintenance and education of orphans, and the children of indigent parents. This princely institution harbors nearly two hundred of these, but the surplus funds have accumulated to such an extent that eight grammar schools and four infant-schools have been established at different parts of the city, to which admittance is free. The buildings for these schools are expensively made, and fitted up with all necessary appliances, and text-books are provided free of charge. Three thousand scholars are educated by this surplus money of the Heriot foundation, and at the present time £11,000 are spent yearly on the Hospital for the education of 180 boys, and £14,000 for the secular education of 3,000 children. The money seems to be most judiciously spent for the latter, as the schools are admirably managed. And yet there is a doubt of this, of which I will not speak in full, but only touch it with a passing reference. For, in the first place, the 180 boys are brought so continuously under the moral and religious discipline, that they almost universally turn out well in life; but then, again, it is not a good thing for people to receive the books and instruction of their children without some tax, either direct or indirect. People do not value that which costs them nothing. And then again, schools for the poor are baneful in the chilling and disheartening tone of feeling which they gender; they create a class feeling among the poor, they put a stigma upon poverty, as if it were a curse and not an inconvenience, and they engender a supercilious pride among the rich.

How much better every way our blending of poor and rich together; the rich taxed relatively to their greater wealth, and the poor relatively to their lesser wealth, but both feeling an equally heavy burden.

I visited one of these Heriot schools, and was received with much civility. The head teacher was a vigorous man, and did his work well. He was surrounded by a company of ruddy children, seated on benches without backs. The boys were uncovered, but some of the girls wore their straw hats, and some wore none. In the higher grades of schools, the pupils were all uncovered, as with us. In the back part of the large room, another class was standing on the benches, reciting to a lady—a fiery and energetic little woman, whose will flashed even in somewhat tingling utterances from the rod which she carried,—for Solomon's injunction is not forgotten or outgrown in God-fearing Scotland. The reading was well taught; the arithmetic also; but the parsing, of which there was a redundancy, was in the old-fashioned Lindley Murray style, making no demands upon any faculties excepting the Yankee faculty of guessing. I had the pleasure of seeing in other schools, that a better method was pursued, that a strict analysis was followed; and that there are teachers in Scotland who see that grammar is a convenient manner of expressing, in the most compact form, the elements which enter into language, rather than a mere unmeaning jargon to burden the memory with. But in this Heriot school there was little to learn; the teaching of reading and arithmetic was good, that of grammar meagre and poor.

There are two great Normal schools in the city, which are well worth visiting. The word Normal has not the same meaning here as with us, but rather designates a model school, with a training establishment for teachers attached to it, as a subordinate and not a dominant characteristic. One of these schools, that near the Imperial Castle of Edinburgh, under the admirable direction of Rev. Mr. Currie, I have twice visited. It is, certainly, one of the finest schools I ever saw. The Teacher's Training school numbers about 60; the model school for boys and girls about 700.

They are of all ages, from beginners in knowledge up to young men and women of twenty-five. There is nothing stereotyped or hackneyed in this school. The rooms are spacious, elegant, and comfortable; the teachers superior; the instruction thorough, fresh, and stimulating. The children are not taught the alphabet at first, but the simplest words each, as a picture, and when the eye is familiar with such combinations as *is, on, to, up*, etc., the phonetic system of spelling is taken up; these simple monosyllables are combined phonetically; the alphabet gradually taught letter by letter, and at last the full mysteries of our obscure and complex orthography mastered. In the grammar, a close system of analysis is introduced, not one which demands an intricate nomenclature for its expression, but the old, common mode: yet so admirably is the analysis of sentences pursued, that the scholar is driven perforce to grammar, to gain the easiest and shortest method of expressing himself. In geography, however, the greatest progress has been made. Here the theory which our lecturers long ago propounded, becomes actual practice, and Ritter's favorite method, of beginning at home, is successfully tried. The first map put before the scholar is that of Edinburgh. He must become familiar with it—with all the hills and valleys, with all the water-courses in its neighborhood and their miniature water-sheds; he must learn all its historical associations, all its geographical conditions. From Edinburgh city he passes to the county of Edinburgh, then to Scotland, then to the whole island, then to the group of the United Kingdom, then to Europe, and so on. A most intelligent method. I think we have got to come to State Geographies yet with us, and not to those which discuss on equal terms of fullness all the States. Or else we shall have to invent a little book of questions, which can be of universal application, and which will allow the teachers of any given spot to develop all its peculiar geographical characteristics. This is the better method, and one most feasible.

The tuition in these model schools is low, only about a pound a year to each pupil. The salaries paid to teachers range

at a little lower figure than with us; the most competent assistants receiving about \$1,500, and the principal about \$2,000. To these schools parents send, who are neither rich nor poor, and the standard of morals and manners is very good.

There is then another rank of schools to which the classes well-to-do send their children. The two principals of these are Mr. Hunter and Mr. Oliphant. It cannot be denied that these are excellent schools: but hardly superior to our best American ones. In Mr. Hunter's, the object system is mainly employed: not ostentatiously, and with a paraded show of great results, but as if a very simple, and natural thing. The school-rooms are plentifully supplied with maps, and the walls are ornamented with cases of natural curiosities, each one of which is made the nucleus of much pleasant teaching. I heard a most instructive lesson on bears given on a very slight text, but one which awakened an interest that was not exhausted till the whole subject of bears had been canvassed with a minute fidelity, which would have delighted even that great connoisseur in bears, Theodore Parker himself. Dr. John Brown, the author of that delightful book, published by Ticknor and Fields of Boston, "*Spare Hours*," has done a great work here by his personal influence in behalf of object teaching, and his fine article on Education Through the Senses, is remembered here in a manner worthy of its merits. These schools are strictly private, and are not unlike the large schools which are found in Brooklyn, and which are equally admirable. Yet they are undemocratic and dangerous: they keep the currents of popular life from blending together; they alienate the affections and interests of those who are naturally equal in intelligence, in morality, in natural nobleness, and only unlike in the accident of wealth. The scholars are taken at the very commencement of their school-days, and retained in them till they cease to receive instruction. Mr. Hunter's and Mr. Oliphant's schools number about 300 each.

Higher than these are the celebrated High School, the Edinburgh Institution, and the Academy. These are the great classical schools of the city, giving a thor-

ough drill in the ancient and the modern languages, and the higher mathematics, and are attended mainly by lads who intend to enter a liberal profession. I may speak of them more in detail in a future letter.

On the whole, it may be said, by way of brief summary, that no American, familiar with our best schools, need visit Edinburgh to receive hints which he could not equally well gather at home. Neither the discipline, the method of instruction, the arrangement of the buildings, nor the quality of the text-books, strike me as superior to our own. And I am delighted to find, that with the dislike of all other republican institutions, there is a perfect willingness to admit the excellence of American schools, and to set their place among the very first in the world. I think the school-houses of Edinburgh in no ways before ours, the seats inferior, the instruction not superior as a whole. Corporal punishment is retained to a somewhat greater extent than with us; there is an equal appeal to the principle of emulation by prizes and rank in the class-room. That admirable feature in the teaching of geography, to which I have alluded, is probably not unknown with us, among those of our teachers who have carried into effect the instructions of Guyot, regarding the true method of taking the pupil from the study of his own home to the study of what is more remote. The teachers of Edinburgh, like our own, seem an intelligent, devoted, moral class of men, exerting a healthful influence not only upon the pupils under their charge, but on all public interests. They are, as a body, held in much respect, but assuredly not more than they deserve.

The University of Edinburgh crowns the whole. It gives a complete training in theology, law, medicine, and the various branches of literature and science. The number of its students varies from one to two thousand. The number of professors is a little more than thirty. The corps has numbered many men of world-renowned name, Dugald Stewart, Dr. Robertson, Playfair, Dr. Thomas Brown, Sir William Hamilton, John Wilson, Dr. Black, Hugh Blair; and on its rolls are even now the distinguished names of Aytoun, Syme,

Simpson, Blackie, and Lee, while Sir David Brewster is the Principal, and Alexander Smith is the Secretary. There are many other men very eminent, in Scotland, but not known as yet with us. Of the method of instruction, which is by lectures with questions, I need say but little. It is not unlike that pursued in our own professional schools. The fees to the courses for the half year vary from two to four guineas each, the usual price being about three. Aytoun, the editor of "Blackwood's Magazine," is a man of forbidding aspect, but a very agreeable lecturer. His department is English literature. A great hater of America, he is, notwithstanding, a very affable and delightful man. Sir David Brewster, the principal of the University, wears his age wonderfully. He is upwards of eighty, and yet is hale and vigorous; his youngest child was born two years ago. He is perfectly erect, and has a singularly benign, sweet expression. Indeed, I have rarely seen so beautiful an old man as Sir David appeared at the recent opening of the winter session of the University. Arrayed in his purple robe, his hair perfectly silvered, his form unbent by age, and with his mild face, his was a figure and an aspect never to be forgotten. His mind retains all its old vivacity, and his imagination all its fire. No man more commands the love and admiration of the Scots than he.

Let me close this letter by speaking of one of the most disgraceful relics of a barbarous age, which disfigure the high civilization of this century. At the opening of the winter session, the amphitheatre devoted to the students was filled to repletion, and a volley of peas saluted every newcomer. About a thousand young men were there, and for some minutes they amused themselves with singing, stamping, and throwing peas. What a change will come over this scene, thought I, when Sir David Brewster and the professors shall enter! But, on the contrary, their entrance was signalized by fresh volleys of peas, and the most unearthly din I ever heard. It was as loud as the screaming of a hundred steam whistles! Sir David stood uncovered, his fine venerable head the target for these missiles, while the professors and the

senatus academicus hid theirs behind their square caps. For a minute this continued, and then one of the faculty tried to pray. But his voice was almost drowned in the cat-calls, the indecent cries, the stamping, and the hissing, while his closed eyes were made the target of a fresh volley of peas. When that service had been brought to a close, Sir David began his address, and labored on as well as he could, the students being apparently bent on applauding every sentence. Peas were flying, and the whole scene was one which made my blood boil. By-and-by one of the professors rose and said, "I see a young man in the act of throwing peas. *That* young man will rise." All eyes were turned in the direction of the professor's finger. The whole room was full of cries, "Don't get up." But the professor insisted, another came to his assistance, and demanded that the principal should cease attempting to go on till "this insult which we have been enduring year after year shall be checked." At length the young man rose, and his name was secured. That put an end to the throwing of peas. Meanwhile, the pounding of feet commenced louder than ever. At one point the principal stopped and said, with some feeling, "Those persons who do not wish to hear me had better retire." But still the indecent noise went on, and Sir David struggled on, never losing his calm placidity, and wearing the same beautiful face to the end. The remarks of Professor Lee, which followed, were fairly drowned with the din. One of the professors attempted to pronounce the benediction, but no sooner had he raised his hands to speak the hallowed words, when a fresh volley of sounds broke forth. At last he managed to catch a moment, and pronounced a hasty benediction. On the whole, it was the most hateful exhibition which I ever witnessed. I met Alexander Smith, the poet, directly after leaving the hall. "Don't taunt us with even a civil war after this," I said to him; "there is *nothing* in America that can compare with the shameful scene which has just transpired here in your University of Edinburgh." Doubtless a few years will see this done away, but the recollection of the annual opening of the classes by the

principal will long be retained as the last traces of the age of violence and brute force. But even now, while I think of such indignities offered to Sir David Brewster, to Dr. Syme and Simpson, to Dr. John

Brown, the author of "Spare Hours," to Blackie, to Aytoun, and Christison, I feel like crying "Shame" on the young men of the University fortolaterating and encouraging such indecency. W. L. G.

SCIENCE AND THE ARTS.

—Popp, after an investigation of the rare earth, Yttria, has arrived at the conclusion that the metals *terbium* and *erbium* do not exist. He also considers the existence of *lanthanum* very doubtful, so that it is probable that this metal may be stricken from the list of elements, and go the way of *donarium*, *norium* and *wodanum*. Popp and Delafontaine have, independently of each other, examined the so-called oxyd of *wasium*, of Bahr. They agree that the supposed new element does not exist. Delafontaine has determined the equivalent of *thorium* from numerous analyses of the sulphate. Regarding the formula of thoria as Th. O_2 , the equivalent of thorium is 115.6. In this determination the value of oxygen is taken as 8. Bischof has discovered a new earth in a calcareous mineral. As yet it gives no characteristic reaction with either the blow-pipe or spectroscope. No name has yet been given to it. A more thorough examination will be made as soon as sufficient material can be obtained.

—On the 27th June, M. Fremy made the following statements: As his name had frequently been mentioned in connection with spontaneous generation, he took occasion to say that he repelled, without hesitation, the idea, if it be applied to the production of an organized being, even the most simple, from elements not possessed of the vital force. Chemical synthesis enables us, beyond doubt, to reproduce a number of proximate principles of vegetable and animal origin, but organization, in his view, puts an impassable barrier to these synthetic reproductions. He does not regard the protein series as proximate principles, but rather as semi-organized bodies, which bear the same relation to organization, etc.,

as a dry seed, which continues for years without presenting the phenomena of vegetation, and which germinates when submitted to the influences of the atmosphere, moisture, and heat. They can, for a long time, remain in a state of organic immobility, but may pass out of this state, and afford, at the expense of their own substance, all the elements of organization when circumstances become favorable for organic development.

—Davy referred the action of his safety-lamp to the cooling action of the wire gauze. Krönig, in Poggendorf's *Annals*, proposes the following:

"Although experiments show that a wire gauze can cool the gaseous products of combustion present in a flame to a point below the temperature at which they ignite, the question arises, upon what does this action depend? Several things are possible. A cold wire gauze introduced into a flame can take away heat, but the cooling thus caused is less the higher the temperature of the gauze rises, and a continuous cooling of the flame by the gauze is probable only when the latter loses on the outside the heat it receives from the flame. Such a loss may occur either by radiation or conduction. If the flame be small, heat may be conducted from the middle of the heated gauze, but the greater the flame the less this will be. Hence it is probable that the gauze loses heat more by radiation than by conduction. This assumption, that the wire gauze radiates more heat than the gaseous flame, is a matter of course, as we know that ignited solids radiate more light than gases at the same temperature." Graham says that the efficacy of the gauze is increased by soaking in the alkaline solution.

—Professor Hinrichs bases his theory of terrestrial magnetism upon the hypothesis that an electrical current is a current of ether; from this he deduces the conclusion that all heavenly bodies, having a translatory and rotatory motion, are magnets. Hence the sun is a magnet. Since the solar spots are changes in the solar atmosphere, and, as they change, so must the ether current, and as any change in this

current must produce a change on the solar magnetism, and through it upon terrestrial magnetism, it follows: (1.) That the elements of terrestrial magnetism change in harmony with the change in the solar spots. (2.) As the sun rotates around an axis differing from his magnetic axis, there must be a period in terrestrial magnetism equal to the apparent time of the sun's rotation, viz., 27½ days.

EDUCATIONAL INTELLIGENCE.

—The report of the Board of Trustees of the Public Schools at Louisville, for the past scholastic year, displays satisfactory success in all the departments of instruction, and confers great credit upon the Board, and its efficient Superintendent, George H. Tingley, Jr. The average number of pupils belonging to the ward-schools was 4,874, of which the average attendance was 4,143. The average number in the high-schools, male and female, was 225, with an average attendance of 210. The cost per pupil on the average number attending was an average of \$18.63 per annum in the ward-schools, and \$70.56 in the high-schools. Taking the average number belonging, which is the ground in some cities, the expenses would be \$11.58 for each ward school and \$65.85 for each high-school pupil. The management of the Louisville high-schools is not surpassed by any others perhaps in the country, except as regards physical culture of the pupils. That very important adjunct to mental discipline is totally neglected, from some inexplicable cause.

—At the annual meeting of the Rhenish School Teachers' Association, for 1864, held at Dusseldorf, many interesting subjects were discussed. Mr. Jager, principal of the "Real" school at Meurs, proposed eight Theses concerning the amount of private study to be imposed upon the pupils, proposing to reduce this greatly, especially the number of compositions demanded from the members of the higher classes. These, in some schools, amount

to thirty-six yearly, equally distributed among the German, French and English languages. It was proposed to reduce this number to four compositions in each language during the course of the year, and to increase the number of extemporaneous exercises in composition and translation at the schools. Mr. Löhrbach, from the "Gymnasium" at Andernach, then spoke concerning the importance of substituting a more thorough study of the French for the surplus of Latin, and thus to make a great approach to the "Real" schools. Mr. L. spoke for sometime on the importance of the change proposed by him, his chief argument being based upon the fact that the Latin no longer occupied its former all-important and universal position, while the French, on the other hand, had become an almost universal medium of conversation, and its acquisition was absolutely necessary for every one who laid claim to anything like a liberal education. Mr. Hausen, from Lennep, then spoke on the arrangement of instruction at schools; on the necessity of making such an arrangement and collocation of courses of instruction as would best aid a generous development of all the powers of the intellect. After some remarks by Mr. Heinen, from Dusseldorf, upon the studies to be desired from the students of the "Real" schools at graduation, and the discussion of a social supper, the meeting adjourned till next year, at Cologne.

— In the primary schools maintained by the town of Paris, instruction is abso-

lately gratuitous; out it would appear from the following letter, addressed to the *Patrie*, by an inhabitant of Montmartre, in the northern quarter of Paris, that, even with that facility, primary instruction is not always within reach of the poor:—"On paying a charitable visit to a poor family at Montmartre, I found a wretched woman and five children; the father, who had been ill for six months, was in the hospital. I asked if the eldest of the children, a boy eight years of age, went to the district school; and was told that his name had been entered on the books eighteen months ago, but that his turn for admission had not yet come. Doubting the accuracy of this statement, I made inquiry and found that not only the school in Dejean street, though capable of accommodating two hundred pupils, was always full; but that there were nearly six hundred children entered on the book for admission, and that a child has usually to wait more than eighteen months before its turn comes. I learned, also, that another school, situated higher up the hill, was in likemanner crowded; and that three hundred candidates for admission were there entered on the books."

The authorities have thought proper to answer the above letter, by alleging that it exaggerates the number of children excluded from the schools by want of room; and that the requisite accommodation is being provided.

A great difference has hitherto existed as to position, between male and female elementary teachers in France. To the former is assured, besides a free house, a minimum annual salary of £24, made up, according to M. Guizot's law of 1833, still substantially in force, of school pence, the revenue of whatever property may have been bequeathed to the schools, and a contribution from the ordinary parish funds. Should these items not bring up the teacher's salary to the legal minimum, an extra three centimes, somewhat more than a farthing, is added to one of the parish rates; should this also leave a deficiency, the county (*département*) makes it up by adding an extra two centimes, somewhat less than a farthing, to one of the county rates; and should a deficiency still remain, said deficiency is made up out of the imperial exchequer. On retiring from active employment, the male teacher becomes a pensioner of the State.

For female teachers, on the other hand, no free house is provided by law, no minimum of salary is fixed, no pension is guaranteed. Accordingly, it is not wonderful that elementary instruction should be less widely spread among girls than among boys, and that the great majority of elementary female teachers in France should be nuns. It is now proposed to extend to female teachers all the privileges of their male fellow-laborers.

CURRENT PUBLICATIONS.

Mr. Hall, the intrepid Arctic explorer, is now wintering at some extreme northern point, feasting upon raw seals' entrails, and other hyperborean delicacies; chatting with his Inuit friends; and otherwise enjoying himself—for in his case it is apparently pure enjoyment—in regions, the very name of which makes the hearer shiver. In his absence we have the privilege of reading his clever narrative of former explorations, of which we have had appetizing bits from time to time, and which is now issued in a large and attractive volume by the Harpers.¹ The

style of Mr. Hall is simple and unpretentious, but the book is as fascinating in its incident and adventure as a romance. The current of the story flows on without any attempts at fine writing to mar the effect or disturb the attention. The author paints faithfully a panoramic view of the Far North, and lends to the rude, animal life of the Inuits a charm beyond its own. The merit of the narrative is heightened by the illustrations, which are cleverly designed and admirably executed. As works of art some of them are notable; indeed it may be said of the greater part that they are marvels of execution in the way of wood-engraving. We can recommend this volume as capital reading for the fireside, as well as a necessary

(1) *ARCTIC RESEARCHES, AND LIFE AMONG THE ESQUIMAUX; being the narrative of an Expedition in Search of Sir John Franklin, in the years 1850, 1851, 1852. By CHARLES FRANCIS HALL. New York: Harper & Bros., Imp. 8vo, pp. 285. Maps and Illustrations.*

part of any well-chosen library; and hope for the safe return of the explorer, with materials for another equally entertaining volume.

A very necessary but very nice little book, small in size, but great in consequence to the younger students of French, is the new *Abecdaire* of Professor Zender.² It is a capital foundation for thorough French instruction; a primer for the juvenile learner which should find its way at once into all schools and families where they mean to begin at the beginning in teaching the foremost of the Romance tongues. The *Gymnastique Vocale pour les Organes d'Articulation*, on page 58, is both amusing and instructive, and will tickle the fancy of the smaller students while it impresses the elementary sounds strongly upon their memory. The little vocabulary and *Prieres a Dieu* which follow, aptly close this very useful and necessary little manual.

We have already spoken with favor of a smaller work by Mr. Walton, "The Dictation Exercises,"³ and find in a later and more complete volume by the same author merits which should induce teachers and others whose business it is to select proper text-books, to give it a close and careful examination. It is certainly an exceedingly practical work, and without drawing comparisons between its methods and those of others, for which we have not here the space, we are impelled to say that it is well adapted for school purposes.

The Ecclesiastical History, of Marsh,⁴ is a standard work, requiring no notice nor analysis; but the fact of the appearance of a sixteenth edition, revised by the author, and brought down to the latest dates, may properly enough be mentioned. In a comparatively small space all the essential facts of church history are clearly presented; and there is an evident intention to give a fair exposition of the tenets and practices of the various sects that divide the religious world. In those schools where ecclesiastical history is part of the line of instruction, this volume will be a necessary text-book.

An interesting biography of the late Professor, afterwards General Mitchell,⁵ is among the latest issues from the press. Written in Mr. Headley's usual glowing style, it will

captivate the fancy of the youthful reader, while a summary of the events in the career of one so distinguished in the scientific world, and the incidental information upon collateral topics scattered through the work, cannot fail of proving profitable. The design of furnishing biographies of distinguished men, written in a popular style, is a good one; but the lives of the great in science, art, or literature can rarely be given with effect during their own generation. Mr. Headley has mastered, in the main, the difficulties attendant on the subject, and his little volume will meet with a ready sale.

There is always a curiosity in the public to know something of the history and habits of notable people, and of no class of notabilities more than operatic artists. Miss Clayton—or, it may be Mrs. Clayton, for we are not sure as to the condition of the lady—has undertaken to satisfy this curiosity in a lump. In a large but delicately printed and portable volume,⁶ she gives us gossip and interesting biographies of the principal female operatic singers, from Katharine Tofts to Teresa Tietjens. She omits Patti, Parodi, and some others of the present day, who are well entitled to a place; but the book is already voluminous. Outside the interest lying in the melancholy details of the lives of some—the harrowing record of their jealousies, intrigues, and sorrows—the scandal that followed the virtuous, and the infamy that attended the vicious—the queer bits of history, not in more stately chronicles—the book shows two things, one physical, and one philosophical. The physical fact is the homeliness of great singers as a rule, for if the portraits are correct, only Malibran and Piccolomini were possessed of beauty; and the philosophical fact is the close similarity between the inner operatic life in all ages, since the lyric drama became a fixed institution. The book is a healthy one, morally and intellectually, and is written gracefully and delicately. The list of operas at the close we have never seen so complete elsewhere, and it is valuable as a matter of reference.

"Silliman's Journal" for November contains several articles which will be interesting as much to the general reader as to the purely scientific man. The papers by Profs. Winchell and Rood contain a great amount of valuable information. The Journal for the coming year will be diminished in size. We regret this, thinking that the subscribers would willingly have paid an increased subscription. As it is, we hope that the magazine will be more liberally supported than in the past, as it is the only purely scientific magazine in the United States.

(2) *ABECDAIRE FRANCAIS-ANGLAIS*, illustré, suivi d'un vocabulaire pittoresque, contenant environ 500 vignettes, a l'usage des deux nations. Par le Rev. J. D. L. Zender. New York: Schermerhorn, Bancroft & Co., 130 Grand street. 18mo, pp. 60.

(3) *A WRITTEN ARITHMETIC, FOR COMMON AND HIGHER SCHOOLS*; to which is added a complete system of Reviews, in the form of Dictation Exercises. By G. A. WALTON. Boston: Brewer & Tilton. 12mo, pp. 336.

(4) *AN EPITOME OF GENERAL ECCLESIASTICAL HISTORY*, from the earliest period, with a condensed account of the Jews since the Destruction of Jerusalem. By JOHN MARSH, D.D. Sixteenth edition. New York: W. W. Dodd. 12mo, pp. 464.

(5) *THE PATRIOT BOY; or, THE LIFE AND CAREER OF MAJOR-GENERAL ORSMAN M. MITCHELL*. By the Rev. P. C. HEADLEY. New York: W. H. Appleton. 16mo, pp. 342.

(6) *QUEENS OF SONG*; being Memoirs of some of the most celebrated Female Vocalists who have performed on the Lyric Stage, from the earliest days of the Opera to the Present Time; to which is added a Chronological List of all the Operas that have been performed in Europe. By ELLIS GREATBORNE CLAYTON. With Portraits. New York: Harper & Brothers. 8vo, pp. 543.

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"COMMUNICATION."

TRUTH can be pressed so far that it remains no longer truth, but becomes falsehood. And thought can be spun out to such tenuity, and in such delicate filaments, that it becomes complex and most ingenious sophistry, but no more the simple, close-grained, solid fact of life. For truth, though sometimes subtle and hard to find and trace, is never resolved, at the last analysis, into what is nebulous and thin, but is large, and round, and solid. And those writers who lead us along uncommon paths to uncommon results, to most ingenious speculations, and to thoughts of such tenuity that the very language which expresses them becomes opaque and meaningless, are not the ones who will, after all, control life, and marshal humanity to nobler heights than those already won.

Among such writers may be classed the author of the article in the October number of the *Atlantic Monthly*, entitled Communication. The name of Mr. Wasson is well known to those readers who affect the Emersonian school. He has written the ablest criticism of Mr. Buckle which has appeared in England or in America. He has contributed to the *Atlantic* the most racy review of Professor Draper's History of Intellectual Development in Europe which has been written, though by no means the most appreciative, impartial, or just. But the style of the article on Communication is the one in which he most delights, and which he generally employs. It is the style which he carries into Theodore Parker's pulpit; and the article under consideration bears internal evidence that it has once served in the capacity of

a sermon—not in the Music-Hall of Boston, but in the smaller audience-room which now contains the diminished number who worship at the shrine of Theodore Parker.

Our limited space will allow us to speak of this article with no degree of fullness. That it contains much truth we gladly admit. That in its relation to education it hints at much, and openly conveys much that is really valuable, we cheerfully concede. The truth in it will carry its own lesson to the thousands who will receive it from the pages which originally recorded it, and needs no repetition, and no enforcement here. The errors, however, may not carry their own denial, they may need specification, if not refutation. To refute them at length is beyond our power in an article of a few pages, but to hint at them, and awaken the attention of the careful reader to them, is both feasible and useful.

And, first, we must protest against that confusion of thought which blends the main theme, the communication of ideas, with that which is proposed in the opening sentence as the theme, the communication of virtue. The two lie wholly outside of each other, and are as distinct, and as distinctly different, as are character and thought. It cannot be reasonably denied that Mr. Wasson has, with much ingenuity, argued on both themes, passing insensibly from the one to the other, and letting the conclusions of the one part lead to those of the other part. Moreover, in establishing the connection he is obliged to do what the most ordinary disputant is compelled to do, namely, to cite Scripture to serve his pur-

pose, and, in citing it, to wrest it from all old established meanings, and to impose upon it his own theoretical interpretation. One of the great primary truths of the religion of Jesus, as received by the uniform judgment of man, is that God, through the agency of his Spirit, imparts new power to the moral life of man, introducing elements of recreative, regenerating force, which operate not by culture and improvement of the old, but by introduction of what is new. The manner in which the Biblical writers portray the ennoblement of our race, and the mode which they propose for the extermination of sin, is nowhere by a process of development or growth, but by a new creation, by the introduction of the "seed of the kingdom." But Mr. Wasson's rendering is unique. Read his words: "Though Paul plant, and Apollos water, yet fruit can come only out of divine and infinite Nature—only, that is, out of the native and communicable resources of the soul." Man, then, does all. God's Spirit nothing. There is no new creation, only an evolution of the old. We must, most earnestly, protest against wresting the Scripture to such profane uses. Let the theory which deals with all virtue on the evolved result of the human breast content itself with what analogies it can find in the world around us, but let it not enter upon the precincts of Revelation with such unwarrantable perversion of its teaching.

But let the theological question lie in the hands of the theologians, a large, deep, and most important question; that old vexed problem whether man is great and pure enough to ripen, under mundane influences alone, into a perfect creature, and throw off all the evils which his sin has entailed upon him. We will not try to solve the question whether evolution from within outward, or recreation from without inward, can accomplish this. We hold a firm opinion on it, one which controls our whole working life, but one which we should not think of using as a basis for settling a problem concerning the possibility of man's communicating his thought to man.

The main offence of the body of the article is the manner in which it elevates what is secondary to a primary place, and

in which it degrades what is primary to a secondary place. The treatment of the subject may be considered exhaustive, and does, in fact, cover the whole ground. But the great and fruitful relation which words, as the signs of thought, bear to words in their combinations as the vehicles of thought, has not been quite fairly treated. Doubtless words convey nothing to the mind which has not attained by its own experience and by its own observation their primary meaning. The sentence, "God is love," does, indeed, as Mr. Wasson asserts, convey nothing to his mind who has no idea of Deity, and no conception of love; nor can it be too strongly stated, that all forms of speech are made up of elements which must be possessed by both parties, the speaker and the hearer. Yet the significant word in such a sentence as that just quoted, "God is love," is the word which Mr. Wasson overlooks, the unmeaning copula itself. This it is that makes that sentence, "Communication." The two elements, God and love, are fused in the idea of His existence, and that idea is imparted by the sentence. Such an idea becomes, from the moment of its incarnation in speech, a simple thought, a fact, just as communicable to the mind through the ear as the shining of the sun is through the eye. And such ideas are all the time circling around us, passing not as things already known, but as new facts, and running up and down the gamut of life, from high to low, from educated to uneducated minds.

We would not imply that Mr. Wasson has passed over this matter in perfect silence. He has hinted at it, but only briefly, and as a secondary issue, placing it side by side with matters valuable and true, but not worthy of the first place. The fact that he recognizes it at all, is the saving virtue of his piece. For what a quietus would it put upon all instruction, if, aiming to lead the way to a higher theory of education than has yet been reached, it should begin by asserting that no superior mind can impart a single thought, a single complex idea to an inferior mind; that the father's wisdom cannot be made over to the child, nor the statesman's to the plain working man. That the eye must be the first and the best of teachers we freely admit; that it is to

gather in by its own searchings and observations the fundamental facts out of which thoughts are to be woven, is indeed most true; but that after that it can receive nothing which it has not eliminated from the depths of its own nature, is a refinement upon the ordinary facts of life which the sound common-sense of men refuses to receive.

So, while we thank the author of the article referred to for an eloquent and original paper, suggestive, and in many ways stimulating, we have also to regret that he has written in an over-nice and somewhat sophistical vein, rather than in strict accordance with the rude facts of life. His goods words respecting the power of strong lives to influence weak ones by earnest speech ought to be pondered and treasured; his suggestions which lead to a more thorough study by the eye of the *objects* of na-

ture are well worth heeding; but his main result, that makes it useless to argue, or to attempt to convey thoughts to the brain through the ear, would put an immediate check even upon the eloquent writer himself, of whom, as it is not too much to say, that he has few living superiors when he brings his best powers to his best thoughts; it may with equal truth be said that his article, now under consideration, if it were true, would seal his own life, and make it impossible for him to be a teacher of his race; he might stimulate and cheer, but he could not lead. We would not wish to see his eloquent pen or tongue silenced, out of fear that he could not communicate his rich thoughts to those less gifted. Rather let him, in wanton ingenuity, spin such subtle fancies as this sermon of his, of which we speak, and then break through his own meshes, and teach us yet more.

NATURAL HISTORY.

NATURAL History, in its largest signification, treats of the earth and all its natural products. The department of natural history which treats of the mineral kingdom is called Mineralogy and Geology; that which treats of the vegetable kingdom, Botany; and of the animal kingdom, Zoology. It is earnestly to be hoped that the time is not far distant when the elementary facts and principles of these different departments will be taught in all the schools of this country. Fortunate will it be for the cause of Education when that time comes; for the study of Nature is perhaps equally indispensable, in mental and in moral development. The material world is universally recognized as the source of supply for all our physical wants; but it is also intended to subserve another and a far higher purpose. The sentiment, "There are tongues in trees, books in running brooks, sermons in stones, and good in everything," is not only poetical, but true; and its poetical beauty consists in its truthfulness. Even the pebble is full of instruction adapted to educate the

mind and expand the heart. The crystals from the mountains and from the mines, are admired for their beauty and prized for their intrinsic value; but their true beauty and value are seen and felt only when we see stamped upon them unmistakable evidence of order and harmony. Their purity and brilliant luster, the mathematical arrangements of the different planes and angles, and the correspondence of angles on the different individuals of a species, and each of the six hundred mineral species crystallizing according to a type peculiar to itself, show that law attains in the materials of the solid earth as well as in the beautiful forms of life which adorn its surface. Every pupil in the schools should at an early period be made familiar with the names and most obvious characteristics of the most common rocks and minerals.

Every mineral and rock may be studied as follows: 1. Its Natural History; 2. Its Uses in the Arts; 3. Its Uses in Nature. Suppose the specimen to be quartz, the most common and most abundant of all miner-

als. We first notice its general appearance and obvious properties; its vitreous luster and hardness; its beautiful six-sided crystals, terminated by six-sided pyramids, its colors, as it appears in the beautiful Amethyst, Rose and Smoky varieties, Chalcedony, Agate, Onyx, Sard, Sardonyx, and Heliotrope. Secondly, we notice that quartz furnishes all the glass to the world, is an indispensable ingredient in mortar, and that the clear varieties are used for optical purposes and for ornaments. Thirdly, we dwell upon the fact that quartz is indispensable to the growth and maturity of plants, and especially to those which hold the most important relations to civilized man, such as the grains and grasses. And thus the mind is stimulated to earnest inquiry, and habits of investigation are established which will lead to the most important results; and the information thus acquired is also important, and will ever be a source of pleasure and a means of usefulness.

The elementary facts and principles of Botany should early be presented. Children naturally love flowers. Nature thus gives us a hint which we should follow in our instruction of the young, and has given a world full of flowers to be used in that instruction. It is an interesting fact that each new day brings new flowers. No sooner has winter released his stern grasp upon the earth, than the delicate petals begin to unfold; and this goes on till the blasts of autumn end the beautiful process. The facts of the vegetable kingdom are full of interest. Fortunate is the teacher who learns the facts and gets even a glimpse of their significance, and who leads his pupils to see what he sees, and thus prepares them to see more and more even after the relations of pupil and teacher have been severed.

But the animal kingdom, as it presents the highest forms of matter and of life, especially claims attention. The number of species of animals is not known, but may safely be estimated as high as a million; a great majority, however, are small and even microscopic. It is an interesting fact, that all this vast number belongs to four great branches:—Radiates, Mollusks, Articulates, and Vertebrates. All the an-

imals in any one of these branches are built upon the same plan.

Radiates comprise those whose parts are arranged around a vertical axis. Such are the Sea-anemones, Coral animals, Jelly-fishes, and Star-fishes.

Mollusks comprise soft-bodied animals, such as Clams, Oysters, Snails, Cuttle-fishes, and the Nautilus.

Articulates comprise those which have the body divided transversely into segments. Such are the Worms, Crustaceans, and Insects.

Vertebrates comprise those which have an internal skeleton. Such are Fishes, Reptiles, Birds, and Mammals, with Man as the highest representative.

Now if we were obliged to study all the thousands of animals in order to get a clear idea of the animal kingdom, it would be a hopeless task to attempt the study of Zoölogy; but nature has so laid out the work, that, by studying a part, we may have a very good idea of the whole. By studying a few polyps, jelly-fishes, star-fishes, and sea-urchins, we can get a good idea of all Radiates, and can readily teach the results to our pupils. The careful study of a snail, clam, and cuttle-fish, gives us a general idea of all Mollusks; the study of a few worms, a crab, and a lobster, and a few insects, throws much light on all Articulates; and the study of a fish, of a reptile, of a bird, and a mammal, reveals the most important facts and principles in regard to all Vertebrates.

What a wonderful fact it is, that each animal is a representative of all the animals in the branch to which it belongs,—that it bears within itself the characters that determine its branch, its class, its order, its family, its genus, and its species! A fish, for example, contains those elements of structure which are found in every Vertebrate upon the surface of the globe; and the fin of a fish, the leg of a turtle, the wing of a bird, the wing of a bat, the paddle of a whale, the leg of a lion, and the arm of a man, are one and the same thought under different forms of expression. Unity in diversity and diversity in unity, is the law of nature. It would seem that, within each type, there is the greatest diversity consistent with unity.

There are not less than one hundred thousand species of insects, and each of these species is represented by thousands, and in many cases by millions of individuals. Now there is one great idea running through all this countless host, binding them together. One individual of this vast number shows what truly constitutes an insect; the insect type is present in every individual of the class.

Natural History will be taught in the schools when teachers themselves become sufficiently interested in the subject; and the practical and educational advantages of the study should stimulate us to earnest efforts of preparation to teach it. The study of Minerals, Plants, and Animals, prepares us to study the history of our globe, and to trace its changes from chaos to its present condition of beauty and grandeur. We must understand the forms of life as they now appear, in order to understand the forms of life that have flourished in the past. The rocks are filled with the petrified remains of thousands upon thousands of species that flourished and passed away ages before the present races were created. In many regions there are more species of animals imbedded in the solid rocks than are now inhabiting the surface of the same territory. One race of plants and animals has occupied the surface of the earth for long ages and then passed away, and another race, different and higher in rank than the one before it, has taken its place; and this has been repeated many times. What an interesting fact, that Nature has embalmed her subjects and handed them down to us so perfectly preserved that we are able to get a glimpse, at least, of the phases of life during all the past ages of the world!

Fellow teachers, the volume of nature is before us. It is full of truth, written on the pebble, the crystal, the solid rocks, the leaves of the forest, the gentle flowers, and the almost endless forms of animal life. To say nothing of the so-called practical advantages of studying this volume, shall we not, by studying the finite and learning how vast, how varied, and how perfect it is in all its plan and execution, have our minds and hearts expanded, and shall we

not get more enlarged ideas of the omnipotence of Nature, of the originating, governing principles of all things?

In order to teach natural history successfully, the teacher needs suitable collections for illustration, and suitable books for reference and aid. Collections which will afford great assistance, can be secured by every energetic and persevering teacher, if he will earnestly begin to collect and preserve Minerals, Rocks, Plants, and Animals. Valuable books on natural history are already in the market, or in a forward state of preparation. In Mineralogy and Geology we have the excellent works of Dana, Tenney's Geology,—Geology for Teachers,—Hitchcock's, Wells', Emmons', Gray and Adams', Loomis's, and Hillside's Geology, and others. In Botany, we have the excellent works of Professor Gray and Professor Wood. In Zoology, the books are less numerous, and less adapted to the wants of American schools. For school-books in this department, we have the Principles of Zoology, by Agassiz and Gould, treating mainly of the anatomy and physiology of animals, Ware's Smellie's Philosophy of Natural History; Ruschenberger's Natural History; and works by Wood, Hooker, and others. There is also a work in press, from the pen of Professor Sanborn Tenny, which contains an outline of the whole subject of Zoology, with a special notice of all the most interesting North American animals, from the mammals down to the jelly-fishes, corals, and sea-anemones. If executed in the manner the high reputation of its author would lead us to expect, it will supply a void. It will be, of course, the first text-book on Zoology which is mainly American in its character, and will enable the teacher to become acquainted with, and thus to teach, the names, appearance, and habits, of all the animals to be met with in the limits of the United States.

[For the amateur naturalist, and those who wish to secure a solid basis of study, while learning the most interesting results already obtained by others, we know of no work more serviceable than Hudson Tuttle's "Arcana of Nature," a work published in Boston in 1860, under auspices somewhat inimical to its popularity.—Ed.]

SCHOOL-BOOK AGENCIES.

THERE is no object to which the American people are more devoted, in the abstract, than to the cause of education. It is not only urged everywhere with us, as a moral duty, to educate the people, but its necessity is held up as a part of the political creed of the country. The whole North and West—if not the South—are apportioned into convenient school districts, each of which has its school-house, or an apology for one; and every parent deems it his duty, as well as privilege, to give his children at least a good common-school education. He may be very neglectful of his educational privileges, but he never abandons the idea of their inestimable value.

With the encouragement given to common-schools, the school-book trade, especially that which embraces the primary departments of instruction, has grown to enormous dimensions, so that it is now believed to cover fully one half of the entire book trade of the country. Large school-book publishing houses are found, not only in Eastern cities, but at the West also; while most of the miscellaneous publishers are from time to time adding school-books to their list. So great are the interests now centered in this one branch of the trade, that the mere matter of introducing school-books, and of retaining them in the schools when once introduced, has grown to be a great business in itself, under the name of "School-book Agencies."

Formerly a good school-book would stand on its own merits, as miscellaneous books do; and it was sufficient that it should be largely advertised, and commended by the public press, to lead teachers to seek it, and, if found satisfactory, to introduce it into their schools; but under the system of "school-book agencies" which has grown up within the past thirty years, these things are very much changed, and it is now a very remarkable school-book that will attain a great sale without the aid of some "agency" means to make it favorably known, and to "push it." We purpose to explain the workings of this agency system, as it was at its origin, and as it

now exists, show how it has been perverted by some publishers and agents, to the great injury of the cause of education, and suggest how its present serious evils may be remedied.

In the infancy of the system, the business of the agents was simply to show and explain their books; in important schools to leave copies for examination; and to offer them for first introduction at about wholesale prices. Little was said by the then modest agent, about the books already in use, as the teacher himself was supposed to be capable of judging both of their merits and demerits; and he was deemed a good and honorable agent who could successfully represent the books for which he labored, without disparaging others. There were then no "book wars" carried on by the agents of rival houses: there was no deceptive pamphleteering, nor issuing of defamatory circulars, to demolish competing books: no carrying cities by storm, and overwhelming a rival, by a wholesale giving away of books for introduction. The agency was a useful and honorable means of bringing new publications to the notice of the educational public.

Now, however, this agency business is managed very differently, and less fairly, by some of our leading school-book publishers—by a few of them it may be, not by all. Their agents go forth to make open war on all rival books; to remove them if they are already in the schools, and introduce those which they represent, by almost any means that will accomplish the end; or, if the rival books are not already in use, to prevent their introduction—by such means as may be successful. These are the openly professed objects of this perverted agency system, as it now exists in some portions of our country. It is, indeed, a mere business matter on the part of the publishers and their agents—and why should we trouble ourselves about it? Why not let them manage their business in their own way? We reply, because it is our business as well as theirs; and because the mode in which they conduct it operates directly and disastrously upon us

teachers, and the educational interests committed to our charge. In our professional pride or ambition we may be, or hope to be, authors also; and it concerns us to know whether our works are to be fairly treated or not by these would-be arbiters of the fate of every school-book.

But we must explain more in detail the workings of this perverted system. It sets out with the principle, on the part of each publisher who adopts it, that rival books must first be disparaged—and the greater their merit the greater the necessity: and to accomplish this end is a part of the personal business of the agent, as he visits the schools in the section of territory assigned for his labors. Sometimes, also, this is done by direct but anonymous criticism, in pamphlet or circular form, and sometimes by means more exceptionable, which we need not detail here. Fair and open criticism of books, by independent educators, through our educational journals or the public press, is not only unobjectionable, but is even desirable; and a candid discussion of the principles embraced in school-books is sure to result in good to the cause of education; but criticisms by rival publishers and their agents, or criticisms written, and opposing opinions given, in their interest, are not only unreliable, and deceptive, but are too often made a part of the odious instruments of a dishonorable agency system. If one interested party thus criticises rival books, the other may be compelled to retaliate in self-defence. Whoever may be the wrongdoer in this case, he should be held to a strict account for any deception which he attempts to practice on the educational public. Moreover, for a hired agent to knowingly slander the works of an author, and coolly damage his literary reputation for pay, indicates a low sense of honor—and a bad state of morals in the community which tolerates it.

Cases like the following, as parts of a perverted agency system, we have heard freely talked about by teachers, so that we are inclined to believe there is a basis of truth in them. If a publisher has his books in general use in a large section of territory, he perhaps reasons thus: My yearly profits from that section are, say, thirty

thousand dollars. My books may not be as good as certain others: but as a business matter, I must keep the latter out of the schools if I can; and to do this I can well afford to pay several traveling agents—and “buy up” a few teachers, and school officials also. That is, he will have both his avowed and his secret agents; and then, with his agency system in full operation, he may well claim to own the territory. We are assured that there are teachers—a very few, we trust,—who secretly receive from publishers—not many such, we hope—an addition to their salary as teachers, on condition of favoring certain series of books. If teachers chose to act openly, as avowed agents, no complaint would be made; but it is the disguised agency that is reprehensible—the pretending to advocate books from principle, when it is merely for a pecuniary consideration.

Some years ago it came to the knowledge of the writer of this article, that a certain State Superintendent of Public Instruction was receiving a salary of — hundred dollars a year, as a consideration for secretly favoring the school-books of a certain publishing house! The Superintendent was not particularly demonstrative in favor of the books: but he gave them his official recommendation; and it was doubtless supposed that his quiet influence would lead to their general adoption in the State. No breath of suspicion, that we are aware of, has to this day sullied his educational fame; he is still known as an honorable educator, and we shall detract naught from his reputation; and yet we consider that he was false to the sacred trust reposed in him by the people. It was made his duty to recommend books to the schools of the State; and although it might be urged in his favor that he did recommend what he deemed the best, yet he occupied a false position, in receiving pay, in the shape of a bribe, from interested parties. But it is quite probable that he did not recommend what he would otherwise have considered the best books; and had it been known that he was under pay from a publishing house, his recommendations would have been of little worth, and his reputation not an enviable one. He cheated the people into the belief that his sole motive in recommending cer-

tain books, was his unbiased and unbought judgment.

But, it may be asked, why detail such exceptional cases, that are discreditable to the few parties only who are directly implicated? We reply, because they have crept into a great "School-Book Agency" system, that threatens to become more and more perverted, and to extend its evil influences over the whole country. We would point out its liabilities to fearful abuse, in the hope that public opinion—and the opinion of the teaching profession especially—will work its reformation. Teachers have the power to control these agencies; for the teachers—except in a few instances where City School-boards direct in book matters—give them their entire support. One of the most serious of the indirect evils that have grown up under this agency system, we have yet to notice. In the intensity of competition between rival publishers and agents, years back, books were sometimes offered to schools, for introduction, without charge. However unwise this may have been, it was not deemed unfair, when each of two parties made similar offers to displace the books of his rival. When, however, a publisher, for the purpose of securing the future trade to himself, makes such an offer to displace the books of a party who has never thus injured him, and claims that it is a fair business transaction, many of the old-school business men will demur to such notions of honor. But, beside the business principle involved, the practice often leads to much evil to the cause of education. Is it right, or honorable, thus to take out of the schools the books of a publisher who has not the capital requisite to carry on a retaliatory book-war against a wealthy rival house? If it is, a wealthy publisher may often break down a less wealthy rival, and keep the best text-books out of the schools. And, even, some wealthy publishers will not engage in a school-book trade that requires such a departure from good business principles to sustain it; for if they do engage in it, and wish success, they know they must fight their rivals with their own weapons, and invest a large amount of capital in books given away in anticipation of future profits. It is not difficult to see that

the publisher who makes this sacrifice at the beginning, will make it up in subsequent prices, which will fall upon other parties. Somebody must pay for it.

Moreover, if this system is to be generally acted upon, and if teachers, who have the power to control it, accede to it, it will effectually keep the trade in school-books in the hands of a few great domineering houses; and their books only will be successful, however inferior to others they may be. Already certain publishers have carried the system so far, in some sections, as to secure from city Boards of Education where their books are in use, the adoption of a by-law, that there shall be no change of books entailing any expense upon the schools! Hence, if a new series of books are published, vastly superior to those in use, and the teachers and patrons of the schools call for them, and the publisher is unable or unwilling to "give the books in," this by-law, enacted in the interest of an existing monopoly, is an effectual barrier against educational progress, which is dependent on the use of the best books. The school Boards have not always known the secret promptings that led to the passage of such a law. We have known cases in western cities where, after a series of books had long been kept in use under this law-sustained monopoly, and a change, had, at length, been imperatively demanded, an inferior series of books has been adopted against a series acknowledged to be better, but whose publishers would not "give them in."

From the foregoing, it will be seen that we are utterly opposed to the system of *giving* books to schools, as is offered by a few publishers, to secure their introduction against, or to throw out, a rival series. It is wrong in principle, and bad in its results to all parties; but worse in its effects upon the schools themselves than upon the publishers, by reason of the odious school-book monopolies which the system tends to foster. Moreover, teachers may rest assured that, as a general rule, it is only the poorer books that are offered in this way, and they should not be deluded by the idea of getting new books for their old ones. The offer should excite suspicion that the new books are not what they

should be. Teachers should never demand such a sacrifice from the publisher, nor deem that they are conferring a favor on him by buying his books. It is quite as much to the interest of a school to have the best books, as it is to the publisher to sell them. Many publishers now offer their elementary school-books at half of the retail prices, for introduction. This is liberal on their part, and ought to satisfy the schools. Let this be the established rule on both sides, and many of the growing evils of school-book agencies will be avoided.

A word, now, to teachers. You may well be suspicious of agents and publishers who make it their business to disparage and denounce rival books, as a means of introducing their own, or of keeping others out of the schools. Depend upon it, the greater the merits of books, the greater the opposition that will be made to them by interested parties. If you are satisfied that detraction is not an honorable kind of agency, you may justly suspect that those who engage in it will not be unlikely to resort to dishonorable means to accomplish their purposes. At best, the publish-

ers are interested parties, and their agents are paid advocates, who present one side of a case only, and you should form no judgment until you have heard the other. We rejoice, however, that there are not many such publishers, and not many such agents. There should be still fewer than there are. Theirs is an evil system, and teachers can bring it into deserved disrepute.

A word of advice to agents themselves, and we close. A gentlemanly and successful agent of our acquaintance, long a popular teacher, makes it a matter of principle as well as policy, never to say a word against opposing books. He does not even ask what books are in use, although he generally manages to learn this incidentally; but he does the best he can to commend the books which he represents. He has no controversies with any one, except it be to discuss educational principles; and he says he never puts out any one's books: he merely puts his own books in, and leaves it to teachers to take others out if they choose. We would commend his system, and his principles, to all book-agents, for their imitation. In such an agency a man can honorably engage.

MENTAL WAREHOUSING.

SHOULD we study in our teachings to adapt ourselves to the "young mind;" or, merely store the memory with truths for the advantage of riper years?

No one can object to storing the mind of childhood with truths. But many of those truths which must be impressed upon the memory, can be understood very imperfectly at first; and to refrain from imparting any knowledge that could not be perfectly understood or realized at the time, would be to leave the child to that harsh and stern, though doubtless effective teacher, experience.

As all truth is valuable, perhaps a child's mind can hardly be stored with too many truths, known to be such; yet one caution is especially to be observed in this storing process,—that is, not to overload, crowd,

and confuse the memory. The same rule applies to mind as to muscle; moderate and frequent exercise strengthens; violent and excessive, and little or no exercise, will weaken and impair.

But the question is, "Should we *merely* store the memory?" and this presents the subject in an entirely different aspect.

Manifestly, to fill up the mind, is not to draw it forth. To store with facts, is not to develop strength of intellect. Memory is a servant of thought.

Buffon pertinently says: "The education of the parrot has been compared to that of the child, it would be often more correct to compare that of the child to that of the parrot." For the memory may be well stored, arranged, packed (sometimes it seems as if it had been hermetically sealed); but

if the mind has not also been taught to think and act for itself, drawn out (educated) to independent exercise, it is worse than useless. Of the two methods referred to, the first has been compared to giving a man a cord of wood, and the second to teaching him the use of his axe and opening the woods for him to cut for himself. These two systems, technically called the pouring-in and the drawing-out systems, are as different, in their results, as daylight from darkness. Education is not knowledge, but a healthy development.

There are various reasons which render it an imperative duty for us to adapt ourselves, in our teachings, to the comprehension of the young mind.

First. In everything else we adapt our means to the end. Why not in this? We do not attempt to build a fire with cold water, nor endeavor, by talking Greek, to convince one who understands only English; but this would be as rational as to try to kindle up a young mind by unintelligible words, or stimulate the brain to activity, by piling upon the memory, ponderous, dry, uninteresting facts.

Second. The facts and truths most fully comprehended make the most lasting impressions. It is true that sometimes words meaningless to the child when uttered, may afterward spring up and bring forth fruit; but how much greater the chances, if, by adapting ourselves to the understanding of the child, we can make the seed take root *at first*,—if we can cause the mind to grow with the body's growth and strengthen with its strength!

"The pebble in the streamlet scant
Has turned the course of many a river;
The dewdrop on the infant plant
May warp the giant oak forever."

Impressions made in childhood are deepest; consequently, of most importance. It has been said, that those impressions made upon the child before he has reached the age of five years, do more to form his mind and character than any and all after impressions, even though not one event that occurred before that period should be remembered. Little can we recall of the impressions, thoughts, words, and acts, that led to others, and others still, which

have made up our mind and character. They themselves have long since passed from our memory, but their influence abides for eternity. And shall we allow this important period to pass away unimproved? Shall we suffer the mind to outgrow this plastic, impressible period, without studying so to adapt ourselves to its intelligence as to make the clearest and best impression? Let us remember that not words alone, but every act, or look, or motion, understood by the child, teaches for good or evil.

When we consider that the mind, at first so plastic and impressible, becomes hardened with increasing years, how momentous seems the responsibility of those who guard it in childhood and infancy!

Third. By studying to adapt ourselves to a child's intelligence, the lessons conveyed are made pleasant, and inspire a love of learning and thinking; while, by merely loading the memory with unintelligible truths, we induce apathy or disgust; study becomes drudgery, and lessons are passed over in the most superficial manner. No surer method could be taken to make the mind dread and avoid all study in after years.

By adapting ourselves to the child's comprehension, we descend far enough to help him up to our own standard, and take the most effective method to teach him to think, and *love* to think, and reason, for himself, to search, observe, compare, and study. We thus develop and expand the mind; while the opposite course shuts it up, or cramps, dwarfs, and cripples the mental faculties. Our great object must be, not to make the mind a passive, stupid recipient of facts, but to create that love of study and mental activity which shall lead it to explore for itself in the fields of knowledge. We must wind up the watch that it may go itself.

"Labor is life; 'tis the still water faileth;
Idleness ever despaireth, bewaileth;
Keep the watch wound or the dark rust assaileth,
Flowers drop and die in the stillness of noon."

The love of thought and study, thus created, forms the habit of mental activity which is so essential to a healthy development.

RECREATION.*

MEN and women, old and young, *need recreation*. Not only rest from toil (and the people of this country are the most overworking people on earth), but we need the occasional restorative of *recreation*. I use that word in its etymological sense: to re-create, to make a man over again as good as new. You and I work ourselves down. Then we must be built up again. We need to unbend. We should not keep the bow always strung, else it loses its elasticity. Men were not created always to be drudges. They were to play once in a while as well as toil. All work makes a man a sorry slave, all play makes him a sorrier fool; the wise person avoids both extremes. God has not only given all powers of enjoyment, but recreation is an absolute need. I must have it, so must you. The best men have always found it so. Biographies of the most healthful Christians reveal them as unbending to an innocent sportiveness. Their grave faces relax sometimes into what the old Puritan used to call "the Christian liberty of laughing." Their over-active brains are regaled with a healthy holiday. When at work they work like men and Christians. When at play, they unbend and sport like little children. That is nature; that is wise; that is beautiful.

Thus, Martin Luther bends over that German translation of the Book of God; and refreshes himself by hearing his beautiful wife, Catherina, sing sweet songs, and by decorating Christmas-trees for his children. Granville Sharp never played more sweetly on human sympathies, when he was arousing the world for the bondman, than when he used to retire from his philanthropies to play upon his flute in his terrace overhanging the Thames. Buxton is good at hunting abuses in Parliament; he is equally good in hunting with dog and gun over the English heath. Wilberforce battles all

day for God and humanity; labors for Bible circulation; labors for genuine reform; labors for Christian missions and for India; and then goes home to amuse his children with delightful stories, and trundles a hoop with them all around his garden at Clapham.

What kind of recreation do men need? For whatever man needs, according to his God-given nature, is right. The daily laborer who toils twelve out of the twenty-four hours, probably finds no recreation like simple rest. Lying down upon his bed is recreation. The Sabbath comes to him with rest; social joys in his humble home are a part of his recreation; an occasional hour in some free library, or listening to discourses of truth and music, is healthful recreation. The great idea with him is *Rest! Rest!* The student wants change of occupation—physical exercise. That attenuated form of his, which bends over the book until his face becomes as bloodless as the page he scans, should go out into God's free air, and all the better for him if the hand that is idle should swing the axe, or pull the oar upon the stream. I never shall forget a walk with that greatest of modern poets, the now departed Wordsworth, over the hills which he has made immortal; as I saw the hale and healthful countenance of the great bard, I understood what his servant meant when he said: "My master's study is always out of doors."

One of the acutest minds in all England—Carlyle—once vented itself in this way to me: "My greatest pleasure is to mount my horse and ride out in the teeth of the wind, away from these smoky streets of London."

Commercial men have many methods of recreation open to the most conscientious, and, first of all, Books! Books make the purest of our recreations. But, some one says, "May I read books of fiction?" Yes, sir, on two conditions only: first, that you never read any but those which are pure and soul-elevating; and next, that you only read those as the occasional recreation of a mind fatigued by severer

* Pulpit and Rostrum, No. I., "Christian Recreations and Unchristian Amusements." By Rev. Theo. L. Cuyler. Schermerhorn, Bancroft & Co., New York and Philadelphia.

duties. It is as if you ask me, while sitting at a table, "May I eat that light syllabub?" "Yes, when you have dined on strong meat." But woe to him who feeds his body on syllabub alone! Woe to the young men or maidens who have no good books in their heads or hearts! I believe there is more demoralization of the young, more loss of character and incipient infamy, resulting from the vile pages of certain pestilential literature, which swarms in this country, than from any other source which Satan employs to ruin our youth. But a *good* book is one of God's best gifts.

Next to books comes Music; music from the cradle-hymn, which the sweet-voiced mother sings in our infancy, to the plaintive dirge that floats over the greensward, where we are laid to our rest; music when it comes as vast waves in the oratorio, swelling and rolling in surges on the soul

like the sound of many waters on the beach; or the martial air stirring the soul like the sound of a trumpet on the tented field; or the delicious evening hymns sung by our loved ones at the altar of our homes; or the anthems sung by the great congregations, rolling up to mingle with the oratorios of heaven. I care not that Satan has stolen music and perverted it to sensual and infernal uses. The possible abuse of a thing is no argument against its proper use. And galleries of art, scientific lectures, all these are means of recreation within the reach of the young; and I do thank those public benefactors, who are bringing to our shores so many masterpieces of genius.

Without dwelling further on specific recreations, we come to this principle, that whatever makes your body healthier, your mind happier, and your immortal soul purer, is Christian recreation.

THE BLACKBOARD AND CHALK.

LEARNED sages may reason, the fluent may talk,
But they ne'er can compute what we owe to the chalk.
From the embryo mind of the infant of four,
To the graduate, wise in collegiate lore;
From the old district school-house to Harvard's proud hall,
The chalk rules with absolute sway over all.

Go, enter the school-room of primary grade,
And see how conspicuous the blackboard is made.
The teacher makes letters and calls them by name,
And says to the children, "Now do you the same;"
Mere infants, you see, scarcely able to walk,
But none are too feeble to handle the chalk.

We visit a school of much higher pretension,
The blackboard here claims undivided attention;
The walls, "dark as Erebus," first greet the eye,
Before them, bright misses and lads we espy;
And the sound of the crayon's irregular tappings,
Reminds us of spirits' mysterious "rappings."

One has pictured a vessel, with streamers unfurled,
Another is making a "map of the world ;"
A third has a problem in "Greenleaf" to solve,
A fourth is explaining how planets revolve ;
While a young physiologist, skilled in the art,
Is sketching the muscles, the lungs, and the heart.

In the midst of this bustle, the schoolmaster stands,
And, lo ! he's a crayon in each of his hands ;
And the chalk in *his* hand has a magical power ;
A teacher might reason and talk by the hour,
But naught would avail all his reason and talk—
The truth is made plain by the use of the chalk.

And the teacher of music the blackboard employs,
The chalk must be used e'en in training the voice ;
Be it rythm or melody, accent or force,
He always insists on the "regular course ;"
Declaring the secret of musical skill,
Is found in the blackboard, the chalk, and the drill.

See the chalk in the hand of the artist. Behold
What beauteous forms as by magic unfold !
The storehouse of Nature he swiftly displays,
Till the dazzled beholder is lost in the maze ;
Designs, without number, appear to the view,
And show what the chalk and the blackboard can do.

O wise PESTALOZZI ! we place on thy brow
A coronet, bright and unfading ; for thou
A legacy rich hast bequeathed unto men,
Our *one* feeble talent by thee is made *ten* ;
We prize thy rare gift, but we never may know
How much to thy matchless invention we owe.

O Chalk ! what a powerful monarch thou art !
In this age of reform, how important thy part ;
Those minds that are swaying the world unrestrained,
In childhood and youth in thy empire were trained ;
Of the wonderful "power of the press" we may talk—
It never can vie with the blackboard and chalk.

An engine so powerful, so mighty to aid—
So simple in structure, so readily made,
A helper so potent in training the young—
'Tis meet that thy praise by the muse should be sung ;
For, though sages may reason, and orators talk,
They can ne'er "make their mark" without blackboard and chalk.

THE NEW METALS.

A HISTORY of the metals and a full description of their combinations with other elements, however interesting to some, would be of little interest to the most readers. In this article, therefore, are presented such points as might not only be of utility to the chemical student or instructor, but also be in some measure interesting to the general observer. The elements thus far discovered by the spectroscopic are four, all of which are metals, and will be described in the order of their discovery.

In 1860, while MM. Bunsen and Kirchhoff were engaged in the spectral analysis of the mineral waters of Dürkheim, their attention was arrested by two distinct lines in the spectrum, which, being entirely new, led them to suspect the existence of new elements. They accordingly initiated a course of experiments, which resulted in the discovery of two alkaline metals, to which they gave the names, Caesium and Rubidium. The former occurred in considerable quantity, but the amount of the latter was so small, that thorough investigation of its properties was impossible until its presence was discovered in the lepidolite of Rozena. In the first of the experiments referred to, one half a milligramme of chlorid of caesium was obtained from fifty grammes of mother-liquor from the brine-works of Dürkheim. Although the quantity thus procured was extremely small, yet the spectral reaction was so wonderfully distinct, that the investigators were encouraged to experiment on the most gigantic scale known in the annals of chemistry. In the alkali-works near by, they evaporated 44,200 kilogrammes (about 40 tons) of the mineral water, obtaining thereby 240 kilogrammes of mother-liquor, from which they separated about half an ounce of caesium and somewhat less of rubidium, with which they proceeded in their investigation.

Caesium is a silver-white metal, resembling potassium in appearance, and derives its name from the peculiar blue lines of its spectrum. It is reduced from the chlorid,

which, in the experiments referred to, was thus obtained: The mother-liquor, after being deprived of alkaline earths by sulphuric acid and subsequent treatment with lime and baryta, was filtered; the filtrate was neutralized by nitric acid, after which the alkalies were precipitated by bichlorid of platinum. As the double chlorid of caesium and platinum is less soluble in water than those of potassium or sodium, the latter were removed by boiling water; the former was then washed, and, after drying, reduced by a current of dry hydrogen, which left metallic platinum and chlorid of caesium. The latter was removed by water, evaporated to dryness, and fused. The fused salt was then placed in the current of a powerful Bunsen battery, in which graphite formed the positive, and iron wire the negative pole. The metal was seen to come off in little pellets at the negative pole, taking fire upon exposure. When metallic mercury formed the negative, and platinum the positive pole, a caesium amalgam was formed, of silver-white color, and crystalline structure. Caesium is the most electro-positive of the elements; like potassium, it unites with oxygen in several proportions; at ordinary temperatures it decomposes water with evolution of hydrogen; upon exposure to the air, it rapidly becomes coated with a white hydrated oxyd, which is excessively caustic. The symbol of this metal is Cs, and its atomic weight reaches the great figure of 133.

Rubidium was also obtained by reducing the chlorid, which was procured in considerable quantity by fusing the lepidolite of Rozena, in which Mr. Cooper discovered .24 of one per cent. of the oxyd. The solid residue, after fusing, was acted on by water, and the liquid thus obtained was treated with bichlorid of platinum; the resulting precipitate was dealt with precisely as was the corresponding one in the case of caesium. When the fused chlorid was submitted to the action of a strong Bunsen battery, the metal appeared at the negative pole in pellets, which rose

rapidly to the surface and took fire, burning with a brilliant red flame. The negative pole was then surrounded by a glass vessel, through which a stream of dry hydrogen was passed. The metal then united with the salt, forming a sub-chlorid, which gave a blue tint to the surrounding portions. This blue mass, though destitute of any metallic appearance, even when subjected to microscopic examination, possessed the property of decomposing water at common temperatures with disengagement of hydrogen. The same curious property belongs to caesium. The rubidium amalgam is more easily obtained than that of caesium, and comports itself in precisely the same manner. Next to caesium, this is the most electro-positive element, and derives its name from the red line of its spectrum; it unites with oxygen in several proportions; is of a silver-white color, with a scarcely perceptible tinge of yellow. Its symbol is Rb; equivalent, 85.36; specific gravity, 1.52. It melts at 68°.5 C., turning into a greenish vapor just below red-heat.

Thallium was discovered in 1860 by Sir William Crookes, while examining a specimen of native sulphur. The honor of its discovery is also claimed by M. de Lamy, but the weight of evidence is very clearly on the side of Crookes. This is the softest metal known, being scratched by soft lead. It has but little tenacity, yet is malleable and can be pressed into wire. Even when cold, two pieces will weld together. It is a good conductor of heat, and electro-chemically is near cadmium. When bent, it gives a creaking sound resembling the "cry of tin." When kept under water, but more especially when boiled, the surface assumes a crystalline structure. It oxydizes very rapidly, upon exposure to the air, but, when once coated, undergoes no further change. It is a whitish metal, resembling lead; its symbol is Tl, and its equivalent, 203; its specific gravity is about 11.86, and it melts at 550° F., beginning to volatilize at red, and boiling just below white heat. It forms a basic and an acid oxyd. The former is soluble in water with alkaline reaction, and the solution has a very caustic taste. The spectrum of thallium is very characteristic. Unless sodium

is present in excess, a green line of great distinctness marks its presence. By this means, *traces* of a gramme may be detected. If sodium be present in excess, the thallium must be precipitated on zinc, or as the iodid or sulphid. It may be quantitatively estimated by precipitation, as protochlorid, iodid, or platina-chlorid. There has been, and indeed there is still, much difficulty in determining the position of thallium among the metals. In many points, it resembles the alkaline metals, and M. Nickles has formed an alum in which thallia displaces potassa. Its salts, however, have a wonderful similarity to those of lead. Moreover, the insolubility of the most of its compounds with the metalloids and the easy dehydration of its basic oxyd, its great atomic weight, and the ready reduction by zinc, together with the complexity of its spectrum and its power to form a strong acid oxyd, all show that it cannot be consistently placed elsewhere than among the heavy metals.

Indium was discovered in 1863 by MM. Reich and Ritter, while they were examining a specimen of arsenical pyrites in the mining school at Freiburg. They perceived a new ray, of an intensely indigo-blue color, not laid down on any chart, so that they deemed the presence of a new element probable. The same reaction was afterwards more strongly perceived in zinc-blende. From the peculiar color of its reaction, the new element was named Indium. It is exceedingly rare. In order to obtain a sufficient amount for investigation, two hundred pounds of zincblende were treated with hydrochloric acid, which, having been distilled, gave forty-three pounds of impure chlorid of zinc. This distillate was treated with water, and filtered. There was left a residue containing a few grains of indium. The metal is white, between tin and silver, in color; it is very soft and ductile, and retains its luster when exposed to the air, or in water at 212° F.; its oxyd is reduced by hydrogen to a metallic powder, which is infusible in the bulb-tube, but fuses readily on charcoal, coloring the flame blue; its density is about 7.16; its fusing point and atomic weight have not been ascertained, but, from the close resemblance of the metal to cadmium, there is much

probability that its equivalent will also approximate.

Respecting the utility of these metals but little can now be said. Their properties are, as yet, not sufficiently understood to render reliable any opinion which might be offered. The great obstacle, at present, preventing any useful application of them, is the smallness of the amount to be found in any one spot. It is true that caesium and rubidium are very widely distributed, occurring in all salt-springs, in molasses, in the ashes of beets and tobacco, as well as in the human tissues, yet, in all, they are so sparingly found that their separation is extremely difficult. These alkaline metals may, perhaps, be useful in the preparation

of colors, if found in sufficient quantity, yet even then they can never compete with the products of coal-tar. Thallium, however, may yet be of use in the arts, as it is by no means a rare element. In one portion of Germany the iodid can be profitably extracted and sold for ten shillings sterling per pound. Its extreme softness will render it more useful than zinc in many respects, while it will readily serve nearly all purposes for which that metal is used.

Whether or not, however, these metals ever prove of any real utility, they will remain as lasting monuments of the genius of their discoverers, and as memorials of the most gigantic series of experiments ever undertaken in the domain of chemistry.

MUTATIONS OF LANGUAGE.

IT is curious to observe the tendency of our scholars, speakers, and poets, to fall back upon the old Saxon forms from which our language was derived. The orthographical system contained in the last volume of the *MONTHLY* is an illustration of this. A somewhat careful comparison of the proposed letters and their sounds, with the ancient alphabetic system of the Saxons, proves that in nearly every case, whether intentionally or by accident, the writer has hit upon the same use of the letters which was in vogue among our ancestors a thousand years ago. A few observations will make this plain :

1. We have ample evidence that the original and usual sounds of the Saxon vowels, a, e, i, o, u, were similar to those now heard in fan, fen, fin, for, full. When the vowel was lengthened, or had an unusual sound, it was marked with an accent, as in the system alluded to. Thus we have in Saxon, lāh, hām, wég, rén, wēste, scild, frīg, or frī, flór, íók, or geók, vúm, púl, hús, for the words which we now write, law, home, way, rain, waste, shield, free, floor, yoke, room, pool, house. We do not mean to say that the old orthography is altogether uniform and consistent; it had a good many anomalies, which were marvellously increased during the Anglo-Saxon period.

2. The letter c, in the system referred to, is used for ch, its common sound in Saxon. Thus, in the old works, we have cild, cicen, circ, for child, chicken, church. So, too, was used for the sound of sh, as in flesc, disc, fisc, scip, scóre, now written flesh, dish, fish, ship, shore. It is an improvement on the digraph sc, to combine the two letters in one character, writing the s below the c, in the form of a cedilla.

3. The *ɑ* proposed for th, in the new method, is very nearly the old Saxon character resembling a mug-handle, and which was used till after the time of Wiclif. This modified *ɰ* had also a bar drawn across it to denote the sharper and more hissing sound, as in hath, doth, etc.

4. The omission of vowels not sounded is also Saxon. The oldest writers used the simple forms, midl, templ, bridl, sadl, nedl, wepn, hrefn, where we write middle, temple, bridge, saddle, needle, weapon, raven. The new system is, therefore, a very old system, and instead of being called *Romanised* orthography, it might with more propriety be designated *Saxonized* orthography.

The following version of the Saxon "Pater Noster," in which a few obsolete words have been exchanged for their modern equivalents, will show how nearly the

system proposed would bring back our language to its original form and appearance. A very curious feature of the Saxon poetry, is the alliterative rhyme, the initial letter of one or more emphatic syllables in the first line of each couplet being identical with an emphatic initial in the second line. The letters in the margin are the rhyming letters:

Our Fæcer in hevn,	h
Bí halóð aai ném;	h
Let aai kíndom kum,	k
And æ néfons ríklóm;	k
Az æ hevnli hóst	h
Gai bíhesta óbé,	h
Let aai wil arú æ worlð	w
Bí fulfild olwé.	w
Giv us, Fæcer, æ fúð	f
Hwéron fed wí mé liv;	f
And forgiv us our gílt,	g
Az wí uærs forgiv.	g
Lív us not in æ toils	t
Ov æ temter tu fól;	t
But from ívl díliver,	l
And líð us wíðl.	l
For aain íz æ majesti,	m
Glóri, domén,	m
Nou and ever, arú éjes	e
Unendip: Ámen.	e

This alliterative rhyming was much cultivated by the Saxon poets. Sometimes, instead of placing the alliteration in two connected lines, each line had a complete rhyme of its own, as in the old form of a deed of land:

Ne plot, ne plóp,
Ne turf, ne toft,
Ne furh, ne fótmaél,
Ne land, ne laése,
Ne ferac, ne merac,
Ne rúh, ne rúm,
Wudes ne feldes,
Landes ne strandes,
Wealdes ne waetares, etc.

Although so distinguished a philologist as Prof. Marsh pronounces the alliterative rhyme uncouth and barbarous, there can be no doubt that it has its roots deep in the elements and structure of our language, for our finest poets are continually sliding back into the old custom. It gives the poetry of Mrs. Hemans much of its peculiar beauty, as in the song, commencing,

"There was music on the midnight,
From the royal fane it rolled."

So also in the following couplet, inimitable for its soft melody:

"She sung of love, while o'er her lyre
The rosy rays of evening fell."

Gray's "Elegy in a Country Churchyard" is perhaps the finest specimen of modern alliterative poetry to be found in the language. Almost every line presents us with two or three harmonious initials.

If we are to restore the Saxon spelling, would it not be well for our poets also to pay some attention to those fine old modes of harmony, which the cultivation of Greek and Latin literature for ten centuries has not yet been able wholly to eradicate?

THE WIND A MUSICIAN.

THE wind is a musician by birth. We extend a silken thread in the crevices of a window, and the wind finds it and sings over it, and goes up and down the scale upon it, and poor Paganini must go somewhere else for honor; for lo! the wind is performing upon a single string. It tries almost anything on earth to see if there is music in it: it persuades a tone out of the great bell in the tower, when the sexton is at home and asleep; it makes

a mournful harp of the giant pines, and it does not disdain to try what sort of a whistle can be made out of the humblest chimney in the world. What a melody it sings when it gives a concert, with the full choir of the waves of the sea, and performs an anthem between the two worlds. Then, how fondly it haunts old houses; mourning under eaves, singing in the halls, chanting a measure of some sad old song around the fireless and deserted hearths."

AMERICAN EDUCATIONAL MONTHLY.

FEBRUARY, 1865.

E PUR SI MUOVE.—OUR NEW VIGNETTE.

CENTURIES ago were uttered the memorable words we make our motto; then a rash declaration, now the watch-word of science. Like the firmament he loved to contemplate, the career of the Florentine philosopher had its alternations of light and darkness. The story of Galileo is full of instruction and thrilling interest, whether we regard him as a youth, struggling under adverse circumstances to acquire knowledge; as the "high-priest of the stars" in middle life, when, flushed with triumph, he was the companion of princes and the recognized oracle of the scientific world; or as a sage, full of years and infirmities, before the awful tribunal of the Inquisition, where, clothed in sack-cloth, kneeling as a penitent, he stultified his intellect and ignored his conscience by recanting his clearest convictions. We need not trace his history, and in our limited space we can not even enumerate all his discoveries and inventions. The points presented display the qualities of his genius, and reveal the secret of his success.

Galileo's attacks upon the philosophy of Aristotle, show that he possessed a mind thoroughly inquisitive and singularly free from the influence of prejudice. The reverence with which this philosophy was then regarded, can now scarcely be understood. Firm in the authority of ages, honored with the faith of a long line of the illustrious and the good, it was held to be that absolute truth which could not be overthrown, either by the demonstrations of reason, or the evidence of the senses. How free, then, must Galileo have been from prejudice, how great his courage, to approach the shrine of the "divine Greek" and not bow blindly down, with the rest of the world, in worship be-

fore it, but to ask searching questions, and, failing to obtain satisfactory answers, to lift his hand against it! The disciples of science wondered at his hardihood and impiety as he dealt it a terrible blow in his experiment of letting fall unequal weights from the tower of Pisa, demonstrating before an assembled multitude the unsoundness of Aristotle's maxim, that the velocity of falling bodies is in the proportion of their weights. In the same spirit he dared to sift the Ptolemaic system, long regarded not only as truths of well-established science, but as decrees of infallible theology. And though accustomed, as he tells us, to regard the opposite theory of Copernicus as the sum of "solemn folly;" though he was surrounded by wise men, who made it the subject of unceasing merriment; though he could not persuade his friend—a distinguished professor in the University of Padua, and a representative of the feelings of the age—to even look through the "magic tube" for evidence in support of that theory, he did not long hesitate to examine it carefully, and, upon perceiving its correctness, to embrace it fully.

This habit of bold and free inquiry, developed another trait with which Galileo was largely gifted,—that fine insight which apprehends the presence of the profoundest truths lurking in every-day phenomena. From a hint presented in the swinging of a cathedral lamp upon which his eye happened to rest, he advanced to the discovery of the isochronism of the vibrations of the pendulum, thus virtually putting in motion the wheels of all the clocks that soon blessed the world. Reports concerning a novel instrument, causing distant objects to appear near, suggested ideas of its possible applications. He rested not until he had transformed an old organ-pipe and a pair of spectacle-glasses into his first telescope. This had a triple magnifying power. After repeated trials, one was constructed which magnified to the "marvellous number" of thirty times; and, while it was carried by other savans through Europe as a wonderful *toy*, he saw it with

"incredible delight" as the mighty wand with which to touch the heavens and make them yield their revelations of countless worlds. Certain changes in the position of what were supposed to be fixed stars, led him to the grand discovery of the four satellites of Jupiter. The changes of the spots on the sun made him infer its axial revolution. A mere hint, thrown out in conversation, caused him to catch enough of the truth of the Copernican system, and stimulated him to advance to the beautiful completeness of the whole.

Speculating boldly upon everything, anticipating gigantic results from the least things, this true philosopher was not hasty in admitting such results into his conviction, and in publishing them abroad as settled truths, while yet half attested. His patience and caution were not, indeed, equal to those qualities in the great Copernicus, who did not venture to make his favorite theory known until he had verified it by twenty-three years of laborious study; but it is sufficiently manifested in his months of unwearied observation and careful computation before announcing the discovery of Jupiter's satellites. He states in a letter to Kepler, that, for many years before teaching the "stability of the sun," he believed it in his heart, but concealed his conviction in deference to public opinion.

Yet, he who was ever cautious in seeking knowledge, was often very incautious in dealing with men. The sarcastic and vehement language with which he denounced his opponents was not only unbecoming to him in the hour of assured victory, but it exasperated them to such degree that they drove him from the University of Pisa, embittered his existence in many ways, and, in fact, did much toward bringing him to the degradation of the Inquisitional confession and prison. It was his insolence in charging ignorance and passion upon the church, and his ingratitude in abusing the extraordinary kindness of Pope Urban VIII., which, almost as much as his heresy in teaching the earth's motion and the sun's stability, drew down

upon him the anathemas of the Head of Christendom. But even here his enemies did not quite triumph. It is said that after he had solemnly sworn, upon his knees, with his hand upon the holy Gospels, to abjure, and detest, and curse his opinion of the earth's mobility, he rose up, stamped upon the ground, and exclaimed, in an undertone, "*E pur si Muove!*"—it does move, for all that. Yes! O fallen, but still noble Galileo, the world does move! The terrors of the Inquisition cannot wrench from thee this mighty truth; the total blindness, the almost total deafness, which followed thee in thy prison, brought this truth in its beauty and harmony to thy heart. And, though thou didst need but to accept fully the crown of martyrdom, to render thy glory perfect, it is yet enough that thy words, uttered in jeopardy, are echoed in exultation.

E PUR SI MUOVE! Significant words, surely, in an educational journal! They remind us of the ignorance, and bigotry, and superstition, that once prevailed over the minds of men and kept down the efforts of free thought. They cause us to rejoice that the world has moved so far in freeing the bodies and in disenthraling the minds of men. They suggest the great characteristics which transformed an obscure student into one of the world's heroes:—an active, keen insight, ready to mount from slightest things to themes of transcendent importance; love of bold and unprejudiced inquiry, and the most wary caution in testing conclusions. By cultivating these characteristics, even we may be inspired to believe that our labors will be successful and our reward abundant. Nor let us shrink from the warning which they give, that if we do aim to stand by the side of the "starry Galileo," we must also be willing to stand with him in "all his woes," and that only through mingled difficulties and victories we may be able to say of the world of Education, in the face of sloth and selfishness and every conceivable opposition, "*E pur si Muove.*"

PUBLIC INSTRUCTION IN ITALY.

AN interesting article in the French "Journal des Debats," gives us information concerning the state of public instruction in Italy. By this it appears that at the commencement of the school-year 1862-63, primary instruction, including public and private schools, both for girls and boys, was enjoyed by 989,231 pupils; that is to say, to one out of every twenty-three inhabitants, taking the population at 21,777,434; or one out of 3.24 children, estimating the number of them, of from six to twelve years of age, at 3,166,000. This proportion, if compared with that of Prussia, where more than three children out of four frequent the primary schools, is not at all calculated to flatter the national pride. Compared with France, however, the case is different. "We, ourselves, in France," it is confessed, "notwithstanding the excellent effects of the law of 1833, are far from setting an example to other nations, and we must not hesitate to avow that we have much to do in order to attain in matters of instruction that first rank which we ought not to abandon to any one if we wish to have the glory of marching at the head of modern civilization." Although Italy has only one pupil for primary instruction out of twenty-three inhabitants, France counts scarcely more than one out of ten; and ten of the French departments, or the ninth part of the whole country remain below the average of Italy.

In order to form a just idea of the state of primary instruction beyond the Alps, Italy must be compared with herself. At the commencement of the year 1861-62, the number of pupils amounted to only 801,202, instead of 989,234 in 1862-63. There was therefore an increase of 188,032 pupils, or about one-seventh, in one year. It was precisely the same augmentation that took place in France in six years,—from 1837 to 1843. During that interval, under the influence of the law of 1833, the proportion of the total number of that

category of pupils, to the amount of the general population, fell from 12.50 inhabitants for each pupil to 10.90, thus showing an increase of one-seventh in the number of scholars.

Considering the influences of the political agitations contemporaneous with this educational progress, it is evident that the Italian government deserves commendation alike for the pains taken to ascertain and make known the intellectual condition of the nation, and for the progress it has already effected in popular education.

SCHOOL HISTORY.

IN the colonial era, schools and schoolmasters were not lightly regarded. But various circumstances, even some of the characteristics of the colonists, were unfavorable to the preservation of many facts concerning their educational privileges and projects, which would now be matters of great historical interest. It is not surprising, therefore, that a comprehensive history of American schools, including the primitive establishments, has never been written. Scattered in various directions, sometimes in full view, sometimes concealed among less valuable matter, is material sufficient for an interesting as well as instructive volume. The "Documentary History of New York," published under the superintendence of Dr. O'Callaghan, would of course afford information respecting many schools and educational movements; yet there is much unused material in the Records filed in the office of the Secretary of State. These manuscripts, neatly attached to firm sheets, and well stitched and bound, constitute a series of handsome volumes, which may be conveniently handled, and, though carefully guarded, are accessible to all who have occasion to consult them.

We should have a school-history. Let our educational journals bring together such new facts as may, from time to time, be attainable, for the use of the future compiler and historian.

EDITORIAL CORRESPONDENCE.

PARIS, January 8, 1865.

The Imperial Library.—An Authorial Cabal.—The French and German Languages Compared.—The Classics Considered.—The Decision.

I MUST tell you of my visit to the Bibliothèque Impériale, and of its results. This is by far the most extensive of the libraries, the recent additions making the number of volumes and manuscripts nearly two millions. For many days I was a zealous devotee at this shrine, anxious to examine various works not elsewhere so readily accessible. Last week, on making my last visit, I abandoned my hope of ever thinking well of French literature. I felt ashamed to confess it, but was conscious that my predilections were unfounded. Coming home to my "observatory" on the fifth floor of the Hotel —, rue Richelieu, who should be awaiting me but my literary chaperon, who was to escort me to—I knew not what nor where, except that authors were to be present, and books to be discussed.

Well, the result showed that nothing could have been more successfully arranged for the removal of my French proclivities. The relative merits of the German and French languages had been previously decided upon for formal discussion. What, think you, followed? Four distinguished *Monsieurs* at once took sides with Herr Professor, and, finally, convinced the only two remaining speakers that the facts were conclusively against the French, in every important feature in a written language! The effect upon any doubt in my own mind, if any remained, may be imagined.

The conclusions deduced from the formal discussion and the subsequent informal conversation, may be summed up as follows: 1. The value of the dead languages is popularly overestimated. 2. The Greek, as a comparatively original language and the fountain of Roman literature, is to be preferred to the Latin. 3. A great portion of the time usually devoted to Latin, might, for practical considerations, be assigned to either German or French. 4. For even mental discipline, Latin is not superior to the thorough study of German. 5. The German language is superior to the French in strength and flexibility, in force and clearness of expression, and in readiness to yield to any possible requirement.

These *dicta* of an authorial cabal are not so true as to be truisms, nor so palpably erroneous as to be at once ignored. The

proper apportionment of time to the languages pursued in our colleges and preparatory schools, is a subject which demands a more thorough and more unbiased examination than it has received. C.

TOLEDO, OHIO, January, 12, 1865.

Educational Advantages.—The Lagrange Street Primary School.—The High School.—A Hint for Letter Writers.

I AM not an experienced writer; but I want to write. I am not a teacher, but I want to write about certain schools. A stranger here, and with no especial preferences for the neighborhood, the schools nevertheless are those of Toledo. What I would say of them most emphatically is, that I want some more competent person to say what I can not. For, here, in this rustic region as it may seem to most of your readers, here in this especial locality, not unforgotten in historic annals, but, until recently, far more celebrated for its supposed richness in miasma, and the predilection of the inhabitants for ague and fever, here, unsuspected by most teachers of the metropolis, is a school system, wisely planned, successfully carried out, and not only an honor to the city, but one which would, perhaps, afford profitable hints for those interested in the New York and New England institutions. The schools are numerous, regular attendance is secured, and good scholarship is attained. Of the subordinate schools, the Lagrange-street school, considering the number of pupils, the studies pursued, the order and discipline observed, and the general character of the recitations, could not be visited by any teacher otherwise than with pleasure and profit. Then there is the High School, located in the central portion of the city, occupying a massive building,—a handsome Italian villa in appearance,—its tower overlooking not only the playground and lawn, but affording the most favorable view of the city and its environs. The pupils comprise chiefly those who have passed up by regular promotions in the subordinate schools, in which exact classification for this purpose is considered indispensable. In this central institution the various branches of study are comprised in an English, an English and Latin, and a Classical course.

My favorable impressions of these schools and the educational system of To-

ledo, are derived mainly from the palpable results. As to the details I am uninformed, but can not doubt that they embrace some interesting peculiarities. Hence this communication, and the expression of my desire that some one, familiar with the facts, should furnish your readers with a brief but comprehensive summary, which I, for one, would read with interest, and which, to some of my fellow-readers, might prove profitably suggestive.

J. W. H.

BLOOMFIELD, CONN., January 25, 1865.

Contracted Writing.—Shorthand.—Plurality of Systems.—Signs of Contraction.

AN editorial in the January number of the MONTHLY contains some suggestions of more than ordinary interest. The burden of writing grows more intolerable every day. But how shall it be removed? Our children may learn a style of shorthand, if that style be sufficiently simple and practicable; but what shall our over-worked editors, clergymen, authors and others do, who have no time to form new habits? Contracted long-hand has been offered; but its use is unsatisfactory. One reason is this: Most men must write many things in full for the convenience of others. Now, while their contracted style might serve them, if it were possible to use it always, the necessity of writing some paper or letter every day in an uncontracted style, makes it impossible that any confirmed habit should be formed. The labor saved to the hand is added to the brain.

When a style of writing entirely different is employed, as, for instance, when short-hand is used for brief writing and long-hand for correspondence, no such confusion arises. The two are so entirely dissimilar, that after using one a few hours the writer takes up the other with as great facility as before.

The same difficulty occurs in the use of two styles of short-hand. All who have tried to use a more fully written style of short-hand at the same time that they were practicing a contracted reporting style, have found that the use of the one was not favorable to facility in the use of the other.

- It is essential, then, if two styles of writing are employed at the same time, that they should be so distinct that each may be entirely independent of the other. This is an important law, and not generally understood.

In regard to the use of marks to represent *con*, *com*, *tion*, *ing*, etc., recommended by Sir Wm. Armstrong, the difficulty is the

same that we have stated; yet, a person who is able to use such a style and no other might reap important advantages from it, with but little labor in acquiring it.

When we found, after seven years' trial, that we could not teach phonography with any success, we spent a year in the study and use of such long-hand contractions. We have since abandoned them entirely; but the reader may find our experience valuable; at least it can be given far cheaper than it was acquired. This idea is a German one, and, we are informed, is employed extensively in Germany at the present time. In writing *unwidersprechlich*, for instance, a small stroke would be made for *un*, another for *wieder*, *sprech* would be written in the ordinary style, and a sign for *lich*; making three arbitrary disconnected signs, and a part—the most radical part—written in the ordinary characters.

This plan answers better for German than for English, as the Germans use compounds to a far greater extent than we do. Acting on this hint, however, and observing that disjoining these prefixes and affixes made the writing slower, and that the use of purely arbitrary signs requires some study and memory, we used the following plan: We wrote *c* for the prefix *con*, or *com*, joined to the remaining part of the word by a connecting stroke, long enough to show that the *c* was a contraction. A similar connecting stroke ending in *g*, represented *ing*, an old-fashioned *ss* was written for *sion*, *tion*, and all terminations sounding like *shon*, or *shun*. An *m*, written above the line, stood for *ment*; *n*, for *ment*; *ml*, for *mental*; *nl*, for *mental*. These contractions, with a few others, united with the omission of medial vowels (vowels neither initial nor final we call *medial*), made a style of writing by which much labor was saved, while it could be reduced to practice in an hour's time.

We neither *teach*, *sell*, *use*, nor *recommend* this plan. The reader may have it gratis, or find a better where he can.

We now think the true plan is to make *brief letters*, and write out the words uncontractedly. For B, write l; for A, c; for T, —; for m, J; for n, —, etc. L.

Mr. Editor—I am very much interested in the MONTHLY. I read each number with great interest, and am profited. But you must allow some strictures on the article of a late contributor, entitled, "How to Teach Reading." It seems like the production of one of those happy men who

never see the difficulties of a subject. These gentlemen always find it convenient to ignore the fact that in English there are forty odd sounds to be represented by twenty-six letters. Their "method" works beautifully in German, where each letter represents one sound; and it works beautifully in English, as long as only one sound of each letter is to be learned. A child may easily learn the words, "cat," "mat," and "rat," and the sounds of the letters in them. But what will these gentlemen do when the words "cate," "mate," and "rate," or the words "fall," "far," and "fane" are to be learned? If the

sound of the letter is to be used as the name, the same letter must have some half dozen names, and confusion worse confounded is the result. Of all the books on these new methods, and all the lecturers, and all the magazine articles, no one ever seems to get far enough to meet this difficulty. Will some of the advocates of these new things give us the required information? Or shall we set them down among the many innovations which are not improvements? The alternative is before them. Let them now speak, or forever hold their peace.

AN OLD SCHOOLMASTER.

SCIENCE AND THE ARTS.

—Last month the American Academy of Sciences held its annual session in one of the rooms of the Capitol at Washington. Papers were presented from Professors Agassiz, Wolcott, Gibbs, J. D. Whitney, Baird, Hilgard, and Peirce, and they will appear in the forthcoming volume of transactions to be published by Congress. The vacancies occasioned by the deaths of Professors Silliman and Hubbard, and Gen. Totten, were filled by the election of Dr. Kirtland, the zoologist, Professor O. M. Rood, of Columbia College, and Major-General Meigs, the engineer. The foreign associates elected are Alexander Braun, the Berlin botanist; G. B. Airy, Astronomer-royal, of England; R. Owen, the English zoologist; F. Wöhler, the celebrated chemist; Sir R. L. Murchison, the geologist, President of the Royal Society; and Victor Reynault, the chemist.

—A French artist, M. Kellerhoven, has invented what he terms "a new process for reproducing the works of the great masters." Messrs. Didot & Co. have published six specimens of his skill: examples of Lothener, Memling, Quentin Matsys, Filippino Lippi, and Fra Angelico, wherein the gold and colors of the original works are rendered with great beauty and marvellous fidelity. Each picture is accompanied by four pages of description in letter-press from the pen of M. Alfred Michaels.

—Gibson, the sculptor, says of the newly found Hercules: "It is the most beautiful work of art in Rome. It made me melancholy the whole of the day after I had seen it, to think that, after all the labors of a life, I had made such slight approaches to the perfection of the master-hand which had executed that work."

—At the late meeting of the British Association, Dr. Davy read a paper on the Temperature of the Sexes. Aristotle's theory that a man possessed more warmth than a woman has been disputed; and it had been held by some, as the result of modern research, that the temperature of women was slightly superior to that of men. Dr. Day, however, considered the early opinion as more correct. On the average, the temperature of males and females was as 10.58 to 10.13. The result of some elaborate experiments recently instituted was, that the temperature, in the case of men, varied between 99° and 99½°, and that of women between 97¾° and 98°. An examination of other animals gave a still higher temperature for the male than for the female.

—In a paper read before the Anthropological Society (Eng.), by Mr. A. R. Wallace, the following statements occur, which help to account for the variation and transmutation of species: (1). Peculiarities of

every kind are more or less hereditary. (2). The offspring of every animal vary more or less in all parts of their organization. (3). The universe in which these animals live is not absolutely invariable. (4). The animals in any country (those at least which are not dying out) must at each successive period be brought into harmony with the surrounding conditions. These are all the elements required for change of form and structure in animals, keeping exact pace with changes of whatever nature in the surrounding universe. Such changes must be very slow; for the changes in the universe must be very slow; but just as these slow changes become important, when we look at results, after long periods of action—as we do when we perceive the alteration of the earth's surface during geological epochs—so the parallel changes in animal form become more and more striking, according as the time during which they have been going on is great, as we see when we compare our living animals with those which we disentomb from each successively older geological formation.

—A writer in the *Technologist* gives the following for the removal of acid stains from colored silks:—Brush the part with tincture of iodine; after a few seconds, saturate with hydrosulphite of soda, and dry gradually. The color will be perfectly restored. This process is entirely new. The reagents mentioned may be procured at any good drug store.

—The question, Who discovered oxygen? is just now exciting some attention in Paris. We have been accustomed to reply to it, oxygen was discovered simultaneously, but independently, by Scheele, of Sweden, and Dr. Priestly, of England. Frenchmen, however, persist in attributing its discovery to Lavoisier; but now it is set down to one Eck Subzbach, who, as early as November in the year 1489, discovered that, when red oxyd of mercury was heated, it disengaged a *spirit*. After him came Pierre Bayen, a physician in the French army, who, in 1772, heated an oxyd without charcoal, and found that it gave off an elastic fluid, which he collected, measured,

and weighed, and found to be heavier than atmospheric air. These facts show us that all great discoveries have undergone a gradual development, and that the germs have originated in the minds of men to whom the world gives very little credit or merit, though they well deserve it.

—The fact that there are insects of different species which bore into lead, has been heretofore known, but a correspondent of the *London Times* recalls attention to the subject in a *résumé* of proceedings as to it in the *Comptes Rendus*. The insect which bored French bullets in the Crimea was not known in Russia, but is said to be common in the Jura, in France, and in Germany and Sweden, as well as in England. It is a wood insect, and usually attacks silver firs and pines. The larvæ of the insect attacks the lead, not the perfect insects, which die in the excavated passages even immediately after the metamorphosis, as very often occurs with insects in general. Roof, and other sheet lead, has been known to be bored by a species of *Bostriche* (*B. capucina*). The *Sirex gigas*, also, often cuts its way into lead by means of its mandibles, as also the *Callidium sanguinum*; and lead pipes have been perforated by an insect named *Apate humeralis*. The mandibles of some of these insects consist of a saw, toothed and cut like a file. Perforations in lead, ascribed to corrosion, may sometimes be the product of the mischievous industry of such insects.

—At the October meeting of the Literary and Philosophical Society of Manchester (Eng.), the president said, with regard to the use of microscopic powers, such as the $\frac{1}{16}$, or $\frac{1}{32}$, that we seem to have reached the limits of the available powers of microscopic object-glasses, as it appears impossible to separate or define lines more numerous than ninety thousand in an inch on account of decomposition of the light, or some other cause. It therefore seems beyond our power ever to discover more of the ultimate composition of matter by aid of the microscope, even were we not prevented by the material composition of our lenses and organs of vision. It is,

moreover, a curious fact, that the smaller creatures are composed of fewer elements than the larger ones, and that the number of elementary bodies composing them decrease in proportion as the organisms themselves decrease in size. It becomes, therefore, a matter for speculation, whether the reason for this may not be that the ultimate atoms of some elementary bodies are larger than others, and that these, from their size, cannot be used in the composition of the more minute forms of organic bodies, and that smaller organisms than those about $\frac{1}{384,000}$ inch do not exist, because the ultimate atoms of all solid bodies are too large to be economically used in their formation.

—Alchemy appears to be not yet wholly dead. One would scarcely suppose that the present high price of bismuth is owing to a revival of the old transmutation theory. A company was lately formed in London, under the direction of a forger, for the purpose of making gold. Bismuth was to have entered largely into the process, and all that could be obtained was purchased by the company, regardless of price. Of course no gold resulted, and the deluded stockholders are now turning

their bismuth into gold in a legitimate way, by cautiously selling it at the present high price.

—Mr. Tegetmeier, of the Entomological Society, maintains that bees have no instinct in shaping their cells, as has usually been supposed; but the form is the consequence of the law or property of space, that of seven circles of equal radii, six will just surround the seventh. The cell of the bee is invariably hemispherical at its commencement, and the section of a cell not in contact with another is always circular.

—Dr. Richardson, an English chemist, says that iodine placed in a small box with a perforated lid, destroys organic poison in rooms. During the continuance of an epidemic small-pox in London, he saw the method used with benefit.

—The earth's rotation on its axis is to the revolution of the moon as the sun's rotation is to the revolution of Mars.

—Tobacco, if applied to the abdomen in case of cramp, is very beneficial, but if too long continued, the cramp proves fatal.

MISCELLANY.

—The epithet "Blue Stocking" originated in a club in London, formed of males and females, assembled for literary conversation. Stillingfleet, one of its most prominent members, always wore blue stockings, and was one of the best talkers. So, when absent, his loss was extensively felt, and it became a personal phrase among the friends, "we can do nothing without the blue stockings." And from this coterie it soon passed into literature, becoming descriptive, specifically, of a literary female.

—The Coliseum was built by Vespa-

rian. The area is 287 by 180, and the superficial surface covered by the building nearly six acres. It was capable of containing 17,000 spectators. In the erection of this stupendous pile the emperor employed 12,000 Jewish captives.

—Professor Bunsen of Heidelberg has received the Prussian order "Pour la Mérite," and Professor Liebig a gold medal, struck expressly as an acknowledgment of his services in the cause of agriculture.

—An aerolite lately fell at Orgueil, an analysis of which proved the presence of soluble hyposulphites.

— The terms which we derive from the scientific examination of plants, appear strange when they are used in common life, and it sounds strangely enough to hear that the grateful, juicy part of a strawberry is but a portion of the *flower-stalk*, while the actual fruit consists in the little inedible granules; on the other hand, that in a raspberry we eat a quantity of little genuine fruits, the *carpels* which have become fleshy and succulent, while the same portion of the stem which delighted our palate in the nearly allied strawberry, is here represented by the little white, spongy cone; that in the apple we eat a part of the *flower-stalk*; in the cherry, part of a *leaf*; and that in the nut and almond, we devour a whole diminutive plant, root, stem, leaves, and buds.

— Many a hint is to be obtained from an intelligent practical laboring man, which may lead the philosopher into a train of ideas that may, perhaps, result in discoveries or inventions of great importance. When bricklayers leave off work for a day or two, as from Saturday to Monday, they push their trowels in and out of the soft mortar, so that the bright steel may be smeared all over with a film of it, and find this plan an effectual remedy against rust. In Wren's "Parentalia," there is a passage bearing on this subject: "In taking out iron clamps and ties from stonework, at least four hundred years old, which were so imbedded in mortar that all air was perfectly excluded, the iron appeared as fresh as when first from the forge." Oxygen, which is the main cause of rust, is abundant in the composition of both water and the atmosphere; and that quicklime has an astonishing affinity for it, is evinced in the homely practice of preserving polished steel or iron goods, such as fire-irons, fenders, and the fronts of grates, when not in use, by shaking a little powdered lime on them out of a muslin bag, which is found sufficient to prevent their rusting. Another instance, very different, and far more delicate, bearing upon the same subject, is found in the fact that manufacturers of needles, watch-springs, and fine cutlery, generally introduce a small package of quicklime into the box or parcel containing

such goods, as security from rust, before sending it to a distant consumer, or stowing it away for a future occasion and sale. These cases are extremely curious, because, as a general rule, bright steel or iron has a most powerful affinity for oxygen; consequently, it is very readily acted upon by damp, and is rusted in a short time, either by decomposing the water and obtaining oxygen from that source, or direct from the atmosphere. It is not absolutely essential that the quicklime should be in actual contact with the metal, but if somewhere near, as in the case of the parcel of lime packed up with the needles or watch-springs, the bright metal will remain a long time without the least alteration in its appearance: the lime (which is already an oxyd of calcium) either receiving an additional dose of oxygen, or being converted into a carbonate of lime.

— A mammoth pound-cake was on New Year's day presented by Mr. Samuel H. Crook to the children of the Five Points Mission. It was 10 feet in length, 22 inches wide, 16 inches thick. Among the ingredients were 175 pounds of flour, 125 pounds of sugar, 80 pounds of butter, and 1,000 eggs. The ornamental confectionery was itself a curiosity, comprising festoons, mottoes, and various emblems; the Lord's Prayer, the American Eagle and the national flag, being executed in sugar-work with delicacy and skill. The entire weight of this gastronomic monstrosity was about six hundred pounds.

— The most faithful likeness of Immanuel Kant ever produced is now being multiplied by photography. It is by no less a hand than that of Vernet, the elder, who painted it in Königsberg, while on his way to St. Petersburg, and it is now in the possession of Dr. Jachmann, of the former place.

— We regret to have to announce the death of the travellers Madame Tinné and Mr. Schubert, who have fallen as the latest victims to the murderous African climate. It will be remembered that they were endeavoring to find traces of the unfortunate African explorer Dr. Vogel.

—We learn from the *Hobart Town Mercury* that the experiment of acclimatizing English salmon and trout in Tasmania has been completely successful. The ovasent from England arrived in April, and on the 4th of May the first trout made its appearance, followed on the succeeding day by the first salmon that had ever been seen

in Australia or south of the Equator. By the 8th of June, some thousands of healthy trout and salmon had been hatched, and were set free into the breeding ponds. So that the great undertaking of introducing these fine fresh fish into the Australian Colonies, may now be considered to have been successfully accomplished.

EDUCATIONAL INTELLIGENCE.

—Professor William Wells, long of the Faculty of Genesee College, has been elected Professor of Modern Languages and Belles Lettres in Union College.

—During the past year the colleges and seminaries of this country have received liberal contributions. Yale College has received \$450,000; Amherst, \$110,000; Princeton (N. J.), \$180,000; The Syrian College, \$103,000; Trinity (Hartford), \$100,000; Rutgers (N. J.), \$100,000; Chicago Theological Seminary, \$80,000; Bowdoin (Me.), \$72,000; New York University, \$60,000; Wesleyan University (St. Louis), \$50,000; Andover Theological Seminary, \$50,000; Dartmouth, \$47,000; Harvard, \$44,000; Williams, \$25,000; Middlebury, \$10,000. These are some of the figures, and for these war times they tell a good story.

—In Bavaria public attention has been called to the prevalence of short sight, and the increasing use of spectacles by the young. Accordingly, the authorities have instituted a crusade against certain removable causes of the evil, such as the imperfect lighting by day of school-buildings, owing to original faulty construction; the imperfect lighting of them by night through a cruel economy; the injudicious placing of the lights, or of the benches and black board in relation to them, whereby the sight of the pupils is strained; and the use of glasses not needed, or unsuitable.

—Though attendance at school is obligatory throughout the Austrian empire,

the actual attendance varies greatly; so true is it that various circumstances, as the sparseness of the population, the badness of the roads, and the brutishness of the people, or their political disaffection, render the strictest obligation nugatory. The percentage of children in attendance is, in Austria proper, the Tyrol, Bohemia, and Moravia, 98; Styria, 84; Carinthia, 72; Hungary, 55; Venetia, 34; Croatia, 20.

—A French scientific journal attacks the measure which obliges the principals of "Primary Normal" schools to make, from time to time, certain meteorological investigations. The director of the Observatory replies to this in the *Bulletin International*. "The administration knows the zeal of the Normal schools, the talent and devotion of their principals and teachers. The four Normal schools of the parish of Nancy have made meteorological investigations for the past seven years, induced by M. Faye. These observations, well and regularly made, are now being calculated and will soon be published. Other normal schools have also voluntarily imposed the same duty upon themselves. It is justly intended to spread in the country districts a practical knowledge of those important phenomena, and to do this, requires first a thorough instruction of the schoolmasters of our normal schools in this important science. The administration is certain that by inspiring those young men with the spirit of observation and research, good results will be obtained, and this has also been the opinion of all the General Councils."

—Phillips Academy, at Andover, was totally destroyed by fire on Monday morning, December 21st; probably the work of an incendiary. The building was of stone, and was erected about fifty years ago. It was valued at \$20,000, and was partially insured. The school has over two hundred scholars, and will go on without interruption.

—John D. Willard, recently deceased, has bequeathed \$10,000 to Dartmouth College; and a graduate of the college in Western New York, has recently contributed \$1,000 to found a scholarship.

—The corner-stone of the Yale school of fine arts, which A. R. Street, of New Haven, has generously offered to erect at his sole expense upon the college grounds, was recently laid with the usual interesting ceremonies. Prof. Edward E. Salisbury, Rev. Dr. Harwood, Donald G. Mitchell, Gov. Hoppin of Rhode Island, and others, made addresses.

—Nearly ten thousand dollars have been recently subscribed in this country for a native Protestant female seminary in Beirut, Syria. Until quite recently no Syrian girl could read; and when schools were first opened for girls, it was very difficult to induce parents to send their daughters, though tuition and board were free. One parent said to one of our missionaries, that he would as soon think of educating a cat as a girl. But, since the fearful massacre in 1860, and the liberal benefactions sent from this country, there has been a great change, and there are now nearly three thousand children in Protestant schools in Syria, of whom one-third are girls. In Beirut alone there are now five hundred girls in these schools.

—The advantages of Free Schools begin to prevail in many sections of Missouri. Our reports from St. Joseph are most favorable. "The schools are controlled by a Board of Education, of which Capt. Louis Hax is President, E. B. Neely, Secretary, and John Calhoun, Treasurer. The schools are under the immediate supervision of E. B. Neely, Superintendent. The school

buildings are commodious and well-constructed. The schools are of three grades: Primary, Intermediate, and High Schools. There are seven schools in all—three primary, three intermediate or grammar schools, and one high school. In the primary schools are taught only the strictly primary branches; in the grammar schools, the studies of an ordinary English education are pursued; and in the high school, in addition to the usual English branches, the scholars are instructed in the natural sciences, mathematics, and the ancient languages. The able Superintendent, Mr. E. B. Neely, visits each school weekly, advises with the teachers as to the best modes of conducting the schools, notices the recitations of the classes, and is responsible for the good management of all the schools. The principals of the primary schools are Miss Alice Bruner, Miss India Cowden, and Miss Jennie Parsons. The principals of the grammar schools are Mr. H. C. McLaughlin, Mr. N. Somerville, and Mr. B. R. Vineyard. The Superintendent is principal of the high school, assisted by Mr. Nelson Wilbur, a graduate of Dartmouth College. There are now in the schools 465 scholars, representing all classes and all professions.

—Maryland has become thoroughly awake to the importance of Free Schools. The new State Constitution authorizes the establishment of Free Schools in every part of the State. A most fortunate appointment of State Superintendent has been made in the person of Louis Van Bokkelen. His ability, experience in educational matters, and indomitable energy, will work out and organize a system which will rival the systems of many of the Northern States, and will become a fit example for other Southern States as they take their magnificent strides for disenthraling the minds of their people. In future numbers we shall notice the great progress which is now inevitable in this State.

—The appointment of Hebrew Professor at the Sorbonne, in succession to M. Renau, has been definitely made in the person of M. Muntz, of the *Institut*. The new professor is a Jew, and he is, further, utterly blind.

—The following rule as to marking attendance has been adopted by the School committee of Boston:—"Whenever a teacher has satisfactory evidence that a pupil has left school without the intention of returning, such pupil's name will forthwith be stricken from the list; but any absences recorded against the name of the pupil before the teacher receives this notice shall be allowed to remain, and be regarded the same as any other absences. When a pupil is absent from school more than five consecutive school days, the name of such pupil shall be stricken from the list at the end of five days, and the absences shall in all cases be recorded while the name remains on the list. The name of the pupil who is suspended from school by any rules of the School Board shall be stricken from the list, and any pupil shall be considered as absent whose attendance at school shall not continue for at least one half of the regular school session of the half day. In noting the absences of pupils

the short vacations shall be disregarded, and pupils who are not present on the first half day of a term, after either of these vacations, shall be marked as absent."

—The salaries paid male teachers at Cincinnati during the current year are: intermediate principals, \$1,600; district principals, \$1,500; intermediate assistants, \$1,100; district assistants, \$1,000. Two female teachers have \$1,000 each; three, \$700; seventeen, \$600; five, \$450; forty, \$420; one, \$400; one hundred and eight, \$360; ninety-two, \$300; thirty-two, \$240.

—The first free school for negroes in Washington was opened about one year ago. There are now in that city about twenty day schools and seventeen evening schools for colored persons.

—The "Lincoln School," a free school for colored females, was opened in Baltimore on the twelfth of December.

CURRENT PUBLICATIONS.

If brevity were the soul of poetry as well as of wit, the lyrics of Montclair¹ should, without hesitation, be placed among the bardic oracles. In his prologue it is made apparent that the brevity of these poems is not unintended, and that condensation has been practiced with the view of making the thoughts suggestive,—

That o'er an outline page the reader's mind,
In self-thought volumes, lingering may dwell.

Praiseworthy purposes, these, especially at this day, when it often seems that the poet's aim is not "vim," but "volume." Our author has not been altogether unsuccessful in his purpose. Many brief passages might be selected, each of which would do more to put in motion the wheels of thought than is done by many longer poems of some writers. A homily is embodied in the poem "External Piety," occupying a single page, in which these lines occur:

Though howling wolves would not destroy each other,
Sect curses sect, brother, alas, dooms brother
Each orthodoxy is the set-up price
That wine the golden keys of paradise;
Whilst law is studied as the week-day code,
To guide the pious on their worldly road.

Suggestive thoughts are happily expressed in even this epigram, entitled,

DEAD AUTHORS.

Unnumbered volumes look from yonder shelves
With beggar's mien, and crave our charity,
Stale, and unpetted by the scholar's hand,
Voiceless, in mock-solemnity they stand,
Like tombstone records; and each title-page
Tells of rash men, drowned in oblivion's sea
By the avenging muse of Poetry.

These short poems are not, however, all thus suggestive. Some are feeble, poorly conceived, and deficient in effect. The most noticeable characteristics are ease and purity. We see no perspiratory efforts to mount the Pegasus, no confusing complication of imagery. We read on, from Alpha to Omega, without being once startled or annoyed. The greatest faults are those of minor character. They are most perceptible in the details of execution. For example, observe the rhymes in the little poem we have quoted,—“Dead Authors.” It has only one legitimate rhyme,—“hand” and “stand” will satisfy even the ear of a child. Granted, for argument's sake, as the logicians say (for we would not otherwise concede it), granted, that the words “charity,” “sea,” and “poetry,” are a triplet of rhyme; there yet remain “shelves,” and a “title-page,” doomed irre-

(1) *REAL and IDEAL*. By JOHN W. MONTCLAIR. Philadelphia: Frederick Leypoldt. 12mo, pp. 119.

medially to single-blessedness, unfavored by "concord of sweet sounds." A similar, but more striking instance, occurs in the "Ode to Poesy." We italicise the rhyming words to show more readily that they are found only in the last seven lines of the entire passage:

In the lone forest
To thee the warbling
Of bird is worship,
And wild-wood rustlings
Are spoken language.
Thou picturest beauty
In desolation.
The crowded highway,
Where wealth, usurping,
Loads man with labor,
To thee is only
A tomb of silence.
Thy words are blessings,
And quick relief;
For the heart-stricken,
Thou softest grief;
To youthful pleasures
Givest virtues tone—
Yes, music's measures
Are all thine own!

Now we do not wish to be deemed hypercritical, but we unequivocally affirm that the greater part of this passage has no merit as poetry, has not the form of poetry, is not poetry, and would be read with more ease, be more readily understood, and even appear more poetical, if given thus, in plain prose:

In the lone forest to thee the warbling of bird is worship, and wild-wood rustlings are spoken language. Thou picturest beauty in desolation. The crowded highway, where wealth, usurping, loads man with labor, to thee is only a tomb of silence. Thy words are blessings, and quick relief.

Yet the author is evidently a scholar; some of his translations from the German are admirable, and even in the selecting of German subjects his cultivated taste is manifested. Thus, Heine has here no coarse jests; we would not suspect him to be the buff-poet who elsewhere would fain hob-nob with his saints, and amuse his angels by sliding them down a rainbow. But, however judiciously our author may select from German writings, and however well he may translate, he has enough of the poetical element in his organization to warrant more strictly original work, and we shall be glad to see his name on a new title-page.

As a literary kinswoman of the "Schönberg-Cotta Family," we welcome Mrs. Kitty Trevilyan. Her *Diary* shall have a conspicuous place on our table. We leave it there at present, purposing to examine it in connection with its predecessors, and to let them show how much can be done in the way of novel writing or other legitimate exercise of fiction, to teach and educate alike the mind and heart.

Some of the writings of Mrs. Oliphant familiar to many of our readers. sequel" to her "Chronicles of Carlingford," which was first given to the public in the pages of "Blackwood," has just issued by the Harpers, and will be avidly read. It is a story of English domestic life, written, not in the sensational but with a stout, strong pen, which have received more frequent mending, although the work is dignified in tone is a pretty fair specimen of modern fiction yet at times the story is flat, and the heavy. The curate himself passes through a prolonged celibacy with better grace than is usual with his fellows. Whether ultimately married, we must not reveal, wish not to spoil the reader's interest in an all-important point of a story, especially of the Oliphant style. Typographical and inaccuracies are generally overlooked by the critic, or regarded as unworthy attention. Whatever the truth may be on the latter point, we usually refrain from drawing attention to such matters unless they are particularly glaring. In the present instance, such peculiarities are more frequent than in most of the works from the pen of the Harpers. Throughout about half the volume, the first half and the last half running-title are transposed, each retaining its proper points, so as to read, "The Perpetual Curate. Chronicles of Carlingford," which circumstance, added to such errors as "daresay," for "daresay," must give the work a very inelegant appearance. misprints are of little consequence in such works, but, for the sake of our own school-books, and our strictly scientific and histories, we protest against haste in book-making.

Improvements corresponding to the modern school-books, characterize many of the works written for the diversion of young or for their moral instruction. This branch of book-making has become important, not only because of its objects, but because of the energy with which it is executed. Several of the well-known printing houses find that the most remunerative portion of their business consists in catering to juvenile fancy. Some of the works to which we thus generally refer, are in many respects; some are defective in execution and deficient in suggestive thoughts. notwithstanding the improvements in children's books as a class, by far the greater number deserve neither censure nor praise. These, is Mark Barnett, whose hero—hero of the book only by its name—allowed to have the prominent place that good character should have secured.

(2) *DIARY OF MRS. KITTY TREVILYAN: A story of the times of Whitefield and the Wesleys.* By the author of *Chronicles of the Schönberg-Cotta Family, The Early Dawn*, etc. With a Preface, by the Author, for the American edition. New York: M. W. Dodd. 12mo, pp. 436.

(3) *THE PERPETUAL CURATE. A Novel.* By the author of "Chronicles of Carlingford," etc. New York: Harper & Brothers. 8vo, pp. 239.

(4) *MARK BARNETT, THE CRIBBLE; OR, WEST MOOR.* By the author of "Weldon Woods." Boston: Hoyt. 12mo, pp. 226.

is a good boy. The author has slighted him. Too many strangers are brought together. The thread of the story is somewhat snarled, and, wisely or unwisely we know not, the author cuts it, promising, that "of the persons in whom the reader may have become interested, more will be learned of their growth in grace and missionary labors around their homes, in the volume bearing the title of 'Francis Morton; the Light of West Morelands.'"

In these days, when children pass so abruptly from infancy to full-fledged manhood, we find books enough for men, and books for small children, but for the intermediate class no suitable provision is made. Mr. Baker's unpretentious series of elementary scientific text-books are truly a great advancement, and go far to fill the void. They are full of useful general information, and characterized by such genial common-sense as to render them acceptable to children of very large growth. The remarks upon the present frivolous modes of dress are judicious. The series treats of geology, physiology, chemistry, and the other natural sciences, so thoroughly, that we are astonished at the amount of knowledge crowded into so small space.

Mr. Baker has also published a series of reading books upon Bible History, and a Bible Class Book.* The former are quite elementary; the latter is of a more advanced character, and will doubtless prove valuable in Sunday-schools.

Works on Geology increase in number almost as rapidly as primary arithmetics. As the science, however, is yet in its infancy, a necessity for new works may be conceded which cannot be claimed for arithmetics. We must, however, bring our testimony against many of the attempts which have been made to divest geology of its technicality so as to render it attractive to the masses.

Such attempts are either gross failures, which, from their pretensions, provoke disappointment in the reader, and consequent dislike of the science, or they belittle the science by avoiding all technical terms. The little volumes of Mr. Page' and Margaret Plues,* are elementary treatises, intensely interesting to one well informed in the science. Everything is told in a truly charming manner; but, as popular treatises, they are failures, as must be the case with all similar books, treating of sciences which cannot be considered in the abstract.

Professor Holloway, in his "Mental Geometry,"† has struck out into an entirely new field. He endeavors to treat geometry in the only true way, as a purely abstract science. He dispenses entirely with diagrams, thus compelling the student to work more thoroughly than under the established mode of teaching. The difficulties in the way of learning geometry in this manner are, however, so great, as to render quite doubtful its general introduction into our schools.

The fact that a fifth edition of Dr. Ridge's work, "Ourselves, our Food, and our Physic,"‡ has just been issued, speaks volumes for the popularity of the treatise that advances such new, yet sound common-sense principles of medicine, and which have, at least, made its author famous and one of the most courted physicians of the day. The second volume of the "Travels in Mexico," by Baron Von Müller, has just been published in Leipsic. The author has written with judgment and as an observer. A very instructive book has been published in Leipsic. The title is "Culturblätter aus Hellas und Rome,"—Leaves of Instruction from Hellas and Rome. The author is Dr. Gölle. The book offers a true and striking picture of the literature, arts, sciences, public manners, and other conditions of these two nations, and is written in a popular style.

(6) I. ANIMALS: THEIR NATURE AND USES. II. MAN: HIS FRAME AND WANTS. III. SCIENTIFIC CLASS BOOK. By CHAS. BAKER. London: Wertheim, Macintosh & Hunt.

(8) READING BOOK OF BIBLE HISTORY. In three grades. THE BIBLE CLASS BOOK, for schools, teachers, and families, with explanatory notes on places, customs, etc. By CHAS. BAKER. London: Wertheim, Macintosh & Hunt.

(7) THE EARTH'S CRUST: a handy outline of Geology. By DAVID PAGE, F.R.S.E., etc. Edinburgh: William F. Nimmo.

(8) GEOLOGY FOR THE MILLION. By MARGARET PLUES. London: Routledge, Warne & Routledge.

(9) MENTAL GEOMETRY: or, Generalizations of Geometrical Demonstrations in Planes, Solids, and Spheres. By Prof. H. H. HOLLOWAY. Philadelphia: Lippincott & Co.

THE SPIRIT OF OUR EXCHANGES.

THE *California Teacher*, edited by John Swett, George Tait, and Samuel I. O. Swezey, is one of our very best Exchanges. In a late number it thus discourses to "Eastern Teachers":—"For the benefit of teachers in the older States, who are casting longing eyes hitherward, we note the following items of information. In San

Francisco about one hundred and twenty teachers are employed in the Public Schools—six grammar masters with a salary of \$2,100 per year in gold, one male sub-master, \$1,500 per year, three male teachers in the High Schools, salary \$2,400 a year, and say, one hundred female assistant teachers with salaries from \$700 to

\$1,000 per annum. The semi-annual examinations for applicants seeking positions in these schools are held by the City Board on the tenth of May and the fifteenth of December, and teachers from the East seeking positions in the city schools should arrive here at those seasons, as no special examinations are held by the City Board. The cost of board in San Francisco is from \$30 to \$40 per month. At these semi-annual examinations there is usually a demand for half a dozen good female teachers. The best time for securing ungraded schools in the State at large, is during the months of May, June and July. During these months the State Superintendent receives, say, from thirty to forty applications for teachers. In these country schools, the salary of male teachers is about \$50 per month and board, or \$75 per month without board, and for female teachers from \$40 to \$45 per month and board. The demand for female teachers is greater than for male, inasmuch as the 97,000 bachelors in the State are always on the lookout for schoolma'ns, especially if they are young and pretty.

The New York Teacher, for January, contains part second of an interesting article entitled "Notes on Grammar;" "Kindergartens;" "The Study of Plants and Flowers;" "Dirty Children;" "Mental Arithmetic;" "About Explanations;" "Scottish Popular Education." The Resident Editor's Department is full, and will doubtless prove interesting to the teachers of the great State of New York.

The Herald of Health and Journal of Physical Culture, for January, contains many interesting articles, among which are "A Discussion on the Nature of Diseases;" "The Hog and the Hog Eater;" "Restless Nights;" "Physical Culture," and "The Mystery of Error."

The Maryland School Journal, still in its first year, is creditable to its publishers and interesting to its readers. Its leading article for January is the "Story of McDonald and his Pupil," and the story has a practical moral. This Journal, starting with the new career of Maryland, will prove, we trust, a powerful agency in aiding that State to fulfil its "manifest destiny."

The Indiana School Journal is the organ of the State Teachers' Association of Indiana, George W. Hoes, Editor, Indianapolis. In the January number the able editor discusses at considerable length what the school system in that State needs in order to desired efficiency. He proposes the following:

1. An appropriation of a small annual sum, say \$30 to \$50 per county, for the support of Teachers' Institutes.

2. A State Normal School, wherein tuition shall, in a good degree, be free for all intending to teach in Indiana.

3. Provisions should be made for keeping the public schools open throughout the State at least — months in each year.

4. Provisions for the issuing of State Teachers' Certificates to teachers of eminent scholarship and professional ability; said certificates to be valid throughout the State, and during the lifetime of the holder.

5. An amendment to the Constitution permitting local taxation.

6. Sundry amendments to the School Law.

In a former issue the *Journal* gave some arguments in behalf of the first two positions. In this issue, attention is given to other points in the proposed amendments of the school system.

Harper's Magazine always has something interesting and profitable for every class and condition of men. "Tom's Education," a pleasant story in the January number, is especially interesting to students and teachers.

Clark's School Visitor has a happy way of saying pleasant things to boys and girls who go to school. It can hardly fail to improve the morals of its young readers.

Our Young Folks is a new illustrated magazine for boys and girls. Its first number (January) is filled with articles by "the best writers." Dr. Lewis' article on the "Physical Health of the Young People of America" is good. He has, we think, made the same remarks many times before, but they are none the worse for that.

The Student and School Mate begins its volume for 1865 with a very interesting story of "Out in the World." This is followed by "A Visit to Dresden," with an illustration. "He Never Smiled Again" is a good historical tale by May Mannering. The *School Mate* is filled with instructive reading for the young, on scientific subjects, history, biography, and topics of general interest.

The great characteristic feature of this well-known Monthly is that each number contains an original dialogue, and "A Speech Marked for Declamation." These make it invaluable to the school room. The dialogue for January is "Luck and Pluck," which can be repeated with profit in every school in the land. The declamation is "Our Foreign Relations," by Maj. Gen. N. P. Banks. Appropriate positions and gestures are carefully marked.

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PEDAGOGICAL LAW.

I.

WE design to furnish, in a form convenient for reference, a complete digest of all the well-established principles of law, English and American, that may be useful to teachers. Although, from the nature of the undertaking, no attempt can be made at originality, yet the labor of collecting and preparing such a digest is a herculean one, and as nothing of the kind has ever yet been published, it can hardly fail to be regarded as a desideratum by legal as well as by educational gentlemen. A careful perusal of these articles, it is hoped, will furnish to any intelligent reader a correct legal view of the powers, duties, responsibilities, and rights of the teacher, of whatever grade. In every case the authorities cited will show whether the law, as given, has the sanction of English or American courts or writers.

We will begin by citing the law, as it has been interpreted and enforced, in relation to the teacher's right to correct or punish his pupils for misconduct or disobedience. This right is in law based upon the theory that the teacher stands in place of the parent, or, as it is technically expressed, *in loco parentis*. Consequently, in order to understand properly the legal rights of the teacher in this respect, we must first know what are the legal rights of the parent.

PARENT AND CHILD.

The rights of parents result from their duties. Parents are bound to maintain and educate their children; the law has

given them such authority, and in the support of that authority, a right to the exercise of such discipline as may be requisite for the discharge of their sacred trust. This is the true foundation of parental power, and the parent's right to correct, to this end and to this extent, has never been disputed by Church or State. "He that spareth his rod hateth his son; but he that loveth him chasteneth him betimes." (Prov. xiii. 24.) Indeed, this power of the parent over the person and liberty of the child was sometimes carried to a most atrocious extent. The punishment for disobedience to parents, under the Jewish law, was death. "And they shall say unto the elders of his city, this our son is stubborn and rebellious, he will not obey our voice; he is a glutton and a drunkard; and all the men of his city shall stone him with stones that he die." (Deut. xxi. 18-21.) The Persians, Egyptians, Greeks, Gauls, and Romans, allowed to the fathers absolute dominion over their offspring; but the Romans, according to Justinian, exceeded all other people, and the liberty and lives of the children were placed within the power of the father. "Jus autem potestatis, quod in liberos habemus, proprium est Romanorum, nulli enim alii sunt homines, qui talem in liberos habeant potestatem, qualem nos habemus." (Inst. Just., lib. 1, tit. 9, § 8.) The power of the father over the life of the child was greatly weakened in public opinion by the time of Augustus, under the silent operation of refined manners and cultivated morals. It

was looked upon as obsolete when the Pandects were compiled. Bynkershoek was of opinion that the power ceased under the Emperor Hadrian, for he banished a father for killing his son. The Emperor Constantine made the crime capital as to adult children. In the age of Tacitus the exposing of infants was unlawful; but merely holding it to be unlawful was not sufficient. When the crime of exposing and killing infants was made capital, under Valentinian and Valens, then the practice was finally abolished, and the paternal power became itself subject to the standard of reason and of our own municipal law, which admits only the *jus domesticæ emendationis*, or the right of inflicting moderate correction under the exercise of a sound discretion. (2 Kent's Com., 208; Taylor's Elements of the Civil Law, 395; Gibbons' History, vol. 8, pp. 55-57; Salust, Bel. Cat., ch. 39; Tacit. de Mor. Ger., ch. 19; Bynkershoek Opera, tome 1, p. 346; Heinec., Syn. Antiq. Rom. Jur., lib. 1, tit. 9; Opera, tome 4.) Dr. Taylor, in his Elements of Civil Law (pp. 403-406), gives a concise history of the progress of the Roman jurisprudence, in its efforts to destroy this undue power of the parent; but Bynkershoek has composed a regular treatise, with infinite learning, on this subject. It is entitled, "*Opusculum de jure occidendi, vendendi, et exponendi, liberos apud veteres Romanos.*" (Opera, tome 1, p. 346.) Heineceius gives the history of the Roman jurisprudence from Romulus to Justinian, relative to this tremendous power of the father, which, he says, was justly termed by the Roman authors, *patria majestas*. The obedience, and even gratitude, of children to their parents, has been in all times considered not only proper, but a primary duty. "Honor thy father and thy mother; that thy days may be long upon the land which the Lord thy God giveth thee." (Exodus, xx. 12.) We have already referred to the great power given to parents by the Persians, Egyptians, Greeks, Gauls, and Romans. Among the Hindoos, disobedience to parents was followed by a loss of the child's inheritance. (Gentoo Code, by Halhed, p. 64.) The first emigrants to Massachusetts followed the Jewish law, and made filial disobe-

dience a capital crime. (Gov. Hutel History of Massachusetts, vol. 1, p. 1.) We believe that all governments, peoples, have regarded filial disobedience with great disfavor. Even filial piety, among the ancient Greeks, have been looked upon as extremely pious, and attended with the most effects of divine vengeance. (Iliad 9, v. 454.) In modern times, the parent's power to exact obedience from children is still conceded, but his power for enforcing his commands are in consonance with the civilization of the times. In English law, the parent lawfully correct his child, being unduly disobedient, in a reasonable manner. (1 Blackstone, 452.) So, also, in American law. (2 Com., 208.) There can be no doubt of the parent's power to enforce his authority to this extent. So long as he keeps within the bounds of reason he will be protected and aided, if need be, by the law.

TEACHER AND PUPIL.

1. The tutor or schoolmaster has a portion of the power of the parent to strain and correct, as may be necessary to answer the purposes for which he is employed. (1 Blackstone, 458.) The power must be temperately exercised, however, and no schoolmaster should feel his liberty to administer chastisement extensively with the parent, however the infant delinquent might appear to deserve it. (3 Barnwall & Alders 584).

2. A parent is justified in correcting his child either corporally or by confinement, and a schoolmaster under whose care and instruction a parent has placed his child is equally justified in similar correction. The correction in both cases must be moderate, and in a proper manner. A schoolmaster stands *in loco parentis*, in relation to the pupils committed to his care, while they are under his care, so that he may enforce obedience to his commands fully given in his capacity of schoolmaster, and he may therefore enforce the moderate correction. (Com. Dig. 13, M. 19; Hawk., c. 60, § 23; and c. 29, § 5.) To use the language of Chief-justice Holt, "A master may

the course of our investigation we expect to be able to find answers for all questions that may be sent us. We also invite criticism from legal gentlemen, or any others who have had an opportunity to study the law for themselves. We are not seeking to deceive, but to instruct and benefit;

and if we commit any errors in the law or otherwise, we will be thankful to the friend who will do us the honor to inform us of it. "Without counsels are disappointed; but in the multitude of counsellors they are established (Prov. xv. 22.)

THE NEW YORK FREE ACADEMY.

FREE instruction, accessible to the great mass of the population, is a creation of this century. The honor of initiating this great advance in civilization belongs to our own country. Prior to 1800, attempts, on a small scale, had been made both in Europe and America, by individuals; but it was not until the formation of the New York Public School Society, in 1805, that any systematic attempts to improve the masses were made. This association opened a number of schools, offering tuition in English branches at a merely nominal price. In 1832, these schools were made free to all. After doing much good in New York and elsewhere, this society gave up its organization, and its schools were afterward managed by the Board of Education, which had been formed in 1842.

These schools, as well as the grammar-schools organized under the Board of Education, offered instruction only in the common English branches, and hence could not offer a liberal education to the poorer classes. It was seldom that the highest division in the school advanced beyond Arithmetic, with a few pages in an elementary Algebra. The ancient and modern languages were not on the list of studies. At that time these schools were little respected; the wealthier classes despised them, and the poorer shunned them as public charities; so that, with one or two exceptions, they were filled with the very poorest class in the city. In this way, then, the schools were failing to fulfil the object for which they were founded, and it became necessary to bring them into better repute.

This matter began to be thoroughly agi-

tated about 1845 or 1846. The commissioners of New York city were men of education and means, and had the interests of the people at heart, and were little swerved by personal or political motives, for the schools were then a part of the political machinery of the city. The matter was carefully considered by these and other leading men, and at length took definite shape in a resolution offered in the Board of Education on July 27, 1846, by Mr. Townsend, since the honored representative of the United States at Japan. This resolution proposed a committee to consider the propriety of establishing an institution offering free education in the higher departments of learning. The resolution was adopted, and a committee was appointed, which, in the following January, reported in favor of founding a free college or academy, "in which, while it should be in no way inferior to any of our colleges, its character, amount, or value of the instruction given to the pupils, the cost of studies to be pursued should have especial reference to the active domestic and operative life, rather than those more particularly regarded as necessary for the law, the medical profession, or the ministry."

The report of this committee was published, and, at a meeting held in February, 1847, another committee was appointed, on behalf of the Board, a memorial was presented to the State Legislature, showing the nature and object of the proposed institution and praying for authority to establish a Free Academy. In the memorial submitted up by this committee and submitted to the Legislature, the Board asked that

portions of the State literature fund as should be apportioned to the third, fourth, fifth, and sixth Senate districts, might be applied "to the support of a Free College or Academy in the city of New York, for the instruction of students who have been pupils in the common schools of said city." The memorial was favorably considered by the Legislature, which, on May 7, 1847, passed an act authorizing the Board to establish a Free Academy; provided, however, that, at an election to be held on the first Monday of June following, a majority of the votes should be cast in its favor. At that election, 19,404 votes were cast in its favor, while there were but 3,409 against it.

All difficulties being now removed, the Board of Education proceeded immediately to organize the institution. An executive committee, with Townsend Harris at its head, was appointed to take charge of the preparations. Seventy-five thousand dollars were appropriated, with which lots were purchased on the corner of Lexington Avenue and Twenty-third Street, and the erection of the buildings was begun. The work was completed in about a year, and in the fall of 1848 the Free Academy was opened, having a faculty of ten professors, with Horace Webster, LL. D., as its President. The professors were all able men, most of whom had not only distinguished themselves as successful teachers, but also as investigators in their different departments of literature. Under such circumstances, the institution could scarcely fail to become popular, and therefore rapidly increased in size. The first graduating class numbered but seventeen, while that of 1864, only eleven years later, numbered forty-nine. The faculty, which at first consisted of but ten instructors, is now composed of fourteen professors, beside whom there are twelve tutors.

As we have already seen, no person can be admitted to the Academy unless he has previously been a member of common schools. For admission, then, it is necessary that the applicant show proof that he has attended these schools for at least one year, and has attained the age of fourteen. Certificates to this effect, to be signed by the principals of such schools as the can-

didate may have attended, are prepared by the Board of Education. These matters being settled satisfactorily, the Principal of the Academy directs the applicant to proceed to certain instructors, by whom he will be examined in the common English branches, and in Algebra to quadratic equations inclusive. If the examination be honorably sustained, the person is admitted. Attempts have frequently been made so to change the character of the institution as to admit persons who had not previously attended the common schools. These efforts have been uniformly unsuccessful, since any such alteration in the institution would entirely defeat the intention of its originators, as the wealthier classes, possessing means of instruction at home, would flock in, filling up the institution, and depriving the poorer classes of the privileges. It would also be a death-blow to the present common-school system, by taking away its chief attraction, and placing it where it was in 1844.

As we have stated, candidates for admission are required to pass a preliminary examination before becoming members of the institution. This examination is held about the middle of July, just at the close of the regular Academic semi-annual examination. At this time, candidates from all the grammar-schools in the city assemble, to the number, frequently, of five or six hundred. Each one of these presents his certificate of age and attendance upon school to the Principal, who enters his name upon a book kept for the purpose, and, opposite to it, places a number by which the candidate is to be known throughout the examination. A ticket, bearing this number, is then given to the applicant, which is the only information concerning him possessed by the person examining. The chief object of this arrangement is to obtain entire absence of partiality in the examiner, so that the rich may have no advantage over the poor, and no successful school over one which is obscure. The examination usually occupies several days, and at its close the applicants are assembled in the chapel of the institution, where the names of the successful ones are read. Another examination for admission is held at the close of the first semi-annual exam-

ination in February, but is not important, and is attended by very few, as its requirements are more extensive than those of the other.

The course of study at the Academy, extending through five years, is divided into the classical and scientific courses, which differ in this only, that the latter prefers modern to the ancient languages. Since a knowledge of classics is not required for admission, the first year is necessarily little more than preparatory to the collegiate course. The full classical course requires the study of Latin and Greek for five years, with an optional modern language during the fifth year; the scientific course requires the study of French, German, and Spanish instead. During the introductory year the pupil completes his Algebra and Geometry, studies free-hand Drawing, Oratory, and Composition, and receives four lectures per week on Chemistry and Elementary Science. In the Freshman year the student reads Trigonometry and Analytical Geometry, with all the simpler branches of mixed mathematics, while he takes a practical course in Descriptive Geometry and Drawing. History and Belles Lettres complete the Freshman curriculum. In the Sophomore year we find the student poring over the Calculus, and studying Science more carefully. His course of Drawing becomes more practical, as is also true of the Belles Lettres. In the Junior year Bartlett's Analytical Mechanics, with his Acoustics, Optics, and Spherical Astronomy, are read, while Chemistry and Natural Science become an essential portion of the course. During this year we find the classical student reading Horace and the Odyssey, while the "scientific" student, having finished the study of French, begins German and reads Don Quixote in Spanish. During the Senior year, Chemistry, with its practical applications, and Civil and Military Engineering, are the especial features of the course. These, with the usual Senior curriculum, complete the course of studies pursued in the institution.

The method of instruction is varied. Twelve of the professors deliver lectures at different times. In three of the departments, instruction is given solely through

lectures. The lower classes are of such inconvenient size as to render it necessary to divide them into sections containing about thirty pupils, each of which, as regards the rest, is in all respects an independent class. The pupils of the inferior classes recite almost exclusively to tutors, who are selected from among the graduates, and are generally those who have distinguished themselves while pupils.

The Free Academy has a good library. It now contains only about 11,000 volumes. This department, however, has been effectually cared for by several of our citizens. In 1852, Ephraim Holbrook bequeathed \$5,000 toward its increase, and in 1857 Seth Grosvenor bequeathed \$30,000 to be permanently invested, and its income to be expended, under certain conditions, in the purchase of books. The library is open and free to students of the collegiate classes, with certain restrictions, however, which render its privileges an additional incentive to study. The philosophical departments are well supplied with apparatus, some of which is on a scale exceeded by that of no institution in the land; and the enterprising Professor* of Chemistry and Physics is continually making additions to the stock. The cabinets in Natural History are, as yet, comparatively small, but through the munificence of some citizens (among them Townsend Harris, Esq.), they contain many valuable and curious specimens.

The internal management of the institution is of the highest character. At nine o'clock, A. M., the students, numbering about 700, assemble in the chapel, where a selection from the Bible is read, and some announcements are made, after which all disperse to their various rooms, and in five minutes more the only noise to be heard in the building is the voice of the reciting students. The order with which the arrangements are carried out is indeed surprising. The discipline of the institution is essentially military in its character, and is remarkably exact, though not severe. Dr. Webster, the principal, is one of the early graduates of West Point, and served with some distinction during the war in

* Professor B. Ogden Doremus, D.D.

Florida. His training in the military service fitted him admirably for the position which he now occupies, for by no other than military order, could 700 boys, just in the transition period, be controlled. For petty offences demerits are given, a more serious misdemeanor receives suspension, while, if the crime be heinous, the offender is expelled.

The system of rewards is thoroughly incorporated with the institution. The Pell Gold Medal was founded in 1849, by Duncan C. Pell, and is to be awarded to the student who shall have made the greatest proficiency in his studies during the year. A like medal, to be awarded to the best mathematician in the Senior class, was founded in 1850, by Edwin Burr. In 1850, Charles T. Cromwell founded a gold medal to be given annually to the best scholar in History and Belles Lettres. To all of these trusts silver medals, to be granted to the one next in merit, are attached. Besides these are twenty bronze medals, and various minor prizes.

There are two examinations during the year, after each of which a merit-roll is made out, in which the students are arranged according to their proficiency in study. At the close of the winter examination in February, the Junior exhibition is held, for which students without blot either in conduct or study are selected by the faculty. Three weeks after the examination in July occurs the annual commencement, at which are distributed the prizes. For this occasion, honorary orations are assigned to the best eight students of the graduating class, and twelve dissertations to such others of the same class as have distinguished themselves by rhetorical ability; all of whom, on commencement night, exhibit their gifts to a sometimes admiring, but more frequently wearied audience.

In reading the list of studies pursued at this institution, one cannot fail to perceive the striking fitness of the course to the object in view. The founders intended, not only that here the pupil should obtain an education equal to that offered elsewhere, but also that here should be furnished peculiar facilities for instruction of the highest order in various branches,

either omitted or carelessly taught in most other colleges. The effort has been eminently successful. While ancient languages tend much to refine the intellect, they nevertheless do little toward preparing man for the actual conflict of life; whereas the careful study of such practical mathematics as surveying and engineering, give a young man a capital which will as surely bring him ample return as though it were money invested in bonds. Such a study renders a man useful not only to himself but to the whole race. This is the controlling idea in the instruction at the Free Academy, where, although its course in classics is, in point of accuracy and practical utility, little short of that of any other institution, its course in Mathematics is equalled by few establishments, and surpassed only by that at West Point. Its graduates are sent out better prepared for active life than the graduates of most other colleges.

The effects of such an institution upon the city can scarcely be conceived. Its influence is felt from the oldest student within its walls to the youngest and poorest boy in the common schools. It certainly has succeeded in "popularizing" the common schools, for since its inauguration these have grown so rapidly, both in size and reputation, that the old buildings, productive of disease alike in teacher and pupils, have been removed and new ones erected. The class of teachers is better; the standard has been raised; so that no one but a well-educated man can attain to a permanent principalship. In many of our public schools Geometry, Latin, and French are taught, while elementary book-keeping is common to all.

The Academy has also had an indirect influence in removing from other institutions the strong bias in favor of ancient languages, and against the mathematics, or sciences. Since its foundation, many others of like character have sprung up, and these have proved by comparison the utter unfitness, as far as the United States are concerned, of European modes of education. Our leading colleges are raising the grade of their mathematical courses, and some are even considering the propriety of regarding them as more impor-

tant than classics. It is to be hoped that this revolution will be worked out, and that throughout the country the true value of Science and Mathematics will be fairly

acknowledged. New York City has at least the credit of having taken the necessary step in this movement, through the Free Academy.

RETROSPECTION AND FORECAST.

"We look before and after,
And pine for what is not."—SHELLEY.

WHEN Mephistopheles, according to Goethe's version of the old tradition, made a bargain for the soul of Faust, the only condition on which the philosopher agreed to surrender his hopes of heaven, was, that the devil should for one instant satisfy, completely satisfy, his heart. In the words of Brooks' translation, Faust says:

"Whenever to the passing hour
I cry, Oh, stay! thou art so fair!
To chain me down I give thee power
To the black bottom of despair!
Then let my knell no longer linger,
Then from my service thou art free,
Fall from the clock the index-finger,
Be time all over, then, for me!"

Mephistopheles imagined that he had made a most excellent bargain; but the sequel showed that he had reckoned, as the devil generally does, without his host. The insatiable mind of Faust baffled his utmost ingenuity; and finally, when human nature was exhausted, the old man sank down and died with the expression of an unsatisfied desire upon his lips.

In this trait, as in many another, the Faust of Goethe may be regarded as typical of the human race. Who ever heard of a perfectly satisfied man, that was not a downright idiot? We live, that is to say, we exist, in the present; but as trees send out their branches in every direction, we send out branching hopes, aspirations, requests, far onward into the future, far backward into the past. The greater portion of our happiness is drawn from the past or the future. We are never as happy as we hope to be; and this very hope enhances the happiness of the present hour. But this natural and inborn characteristic of the human mind, this tendency to be

dissatisfied with things as they are, is capable of strange and unfortunate perversities. It sometimes takes the form of grudging discontent. Some people are so contented, or have so utterly perverted faculties, as to be incapable of receiving enjoyment from things about them; and it is generally the case that such people have very gloomy views of the future. They are forever looking over their shoulders and sighing because they cannot reach their steps across the arid Sahara of the oasis where they once reposed, which their imagination had tricked them with a thousand charms which they never perceived while they had the reality before them. We have frequently met with people,—and who has not?—who believe the human race has gone on degenerating from age to age, ever since the archangel with the flaming sword drove our parents out of Eden. Reversing the doctrine of the gradual development which philosophers, they believe that man is assimilating to the brute creation. Still the world stands for six thousand years longer, to what a pitiable depth of degradation must not man descend, in view of his destiny is correct! To look at the future through the spectacles of these theorists, would be enough to make a lover of his race distracted, and to keep him long for the speedy fulfillment of Cumming's millennial prophecies, in that the end of the world may set a stop to this downward career. Their philosophy seems to be, "*make the worst of things!*" They take a kind of misanthropic enjoyment in being wretched, and in trying to make others believe that there is nothing to be happy about in life or future.

We had a conversation recently with a man of this stamp of mind, who maintained that although mankind had progressed up to a comparatively late period, yet that the race had already passed the highest mountain crest of intellect and morality, and was now looking down and hastening down the other slope toward the valley of the Shadow of Death. We recalled to his mind the fact that just such unreasonable grumblers as himself have lived in every age since the beginning of the world, who have abused their own times and lauded the past with the same vehemence; but the only answer he gave was to call in question their ability to comprehend their age,—an infirmity which he never dreamed of ascribing to himself. He was honest, no doubt, in his views; but if he could only be put to sleep for a hundred years, and wake up in 1965, we have no doubt that he would look back to this century as the time of the grandest and most sublime development of the human race; and had he lived a hundred years ago, he would have thought as meanly of that century as he now does of the present. The probable reason of such perverseness is the fact that the evil and corruption of the present lies directly under our eyes, offending our moral sensibilities, and—since evil is always more obtrusive than goodness—attracting the lion's share of observation, while the imagination exalts the past for virtues which it never possessed, and at the same time loses sight of the abuses, the wrongs, and all the multifarious forms of iniquity from which no age is more free than another. The grand simplicity which is sometimes imagined to have been characteristic of all nations in the childhood of the world, is but one of those pleasant delusions into which men are often drawn by loose reasoning from analogy. Tradition, history, and remains of ancient art, all show that human nature was never more refined, gentle, and pure, than it is in the present age.

But what shall we say of the poets who are dreaming of the Age of Gold, and sighing, in melodious ditties, for its return? Happy the one who can believe that dream! It gives him one more city of refuge from the cares and oppressive

thoughts of the time,—a sort of fairy bower, into which he may withdraw to enjoy an enchanted sleep, while the great world rages and roars unmolestedly without. There is nothing in poetry more beautiful than this vision of an age in the past when all men lived in a state of innocence, when evil was yet undreamed of, and those physical conditions which inevitably bring suffering in their train were not yet developed in the world. We have always admired Tasso's famous ode on the Golden Age, so beautifully translated by Leigh Hunt. The great Italian poet celebrates that happy period chiefly because it was a time of purity and simple child-like goodness. Hear him, through his genial English interpreter:

"O lovely age of gold!
 Not that the rivers rolled
 With milk, or that the woods wept honey-dew;
 Not that the ready ground
 Produced without a wound,
 Or the mild serpent had no tooth that slew;
 Not that a cloudless blue
 Forever was in sight,
 Or the heaven which burns,
 And now is cold by turns,
 Looked out in glad and everlasting light;
 No, not that even the insolent ships from far
 Brought war to no new lands, nor riches worse
 than war:
 But solely that that vain
 And breath-invented pain,
 That idol of mistake, that worshipped cheat,
 That Honor,—since so called
 By vulgar minds appalled,
 Played not the tyrant with our nature yet.
 It had not come to fret
 The sweet and happy fold
 Of gentle human-kind;
 Nor did its hard law bind
 Souls nursed in freedom; but that law of gold,
 That glad and golden law, all free, all fitted,
 Which Nature's own hand wrote, What pleases
 is permitted!"

Beautiful poetry, though false philosophy! For the sentiment called honor, to which the poet ascribes all the artificial evils and restraints of modern society, is one of the noblest characteristics of all noble minds.

And in spite of all that is beautiful in these poetic visions, there is too apt to be a certain weakness and taint of effeminacy running through them all. Fretfulness at present ills and inconveniences, an inability or indisposition to grapple manfully with

life and to look our enemies in the eye, are too often the secret springs of this worship of an imaginary age of innocence and unalloyed happiness. It is only to be enjoyed as a poetic dream. Only this, and nothing more.

We have known people who, without pretending to sigh for a return of this fabulous age, felt ill at ease in their own times from a simple preference for a different phase of civilization. Without denying the progress which the race has made, they look back with regret to some age of the past, when they imagine they could have found more congenial associations than they find in their times. It is merely a matter of choice, just as a man seeks one class of society and avoids another. Such a man was Charles Lamb. In everything but time he was the contemporary of Shakspeare and Ben Jonson. When a sonnet of his was once rejected by an over-fastidious publisher, on the ground that it might offend the delicacy of the time, he exclaimed that he would "write for antiquity." He was born out of time,—too late by several centuries. We every day see men who seem to be out of place in this age. They are not confined to any class or profession. There are pedants now living who would have been more at home in the Middle Ages,—modern recluses, as much isolated from society as if they lived in caves in the desert. But to particularize on this topic would extend this little essay far beyond its prescribed limits.

We have said that no man, not a downright idiot, was ever satisfied with the present; but there is a wide difference between this sentimental longing for a past that never can return, and a manly, hopeful wish and endeavor to improve the condition of mankind. The first is poetic, beautiful, pleasant, as a recreating thought, in so far as it tends to freshen our belief in the noble capabilities of the human soul;

but utterly wrong and pernicious in as it tends to destroy our confidence in human advancement, by fostering the of progressive degeneracy. That is fatal to hope. Its tragic effects may be seen in the case of Cowper. He was utterly convinced of the hopeless condition of the world, that he could only sigh and lodge in a vast wilderness, where rumors of wrong, or oppression, or could affront his tender heart. That is pitiable; but there is a noble impulse which spurns the evils of the time and looks forward with a hopeful and unclouded heart to a better age, when there will be less wrongdoing, and less unnecessary suffering among the mass of human beings. One of the noblest poems ever written, *Locksley Hall*, shows how a strong, hopeful nature, feeling keenly the injustice that everywhere prevails among nations, can look far into the future, and discern the glorious destiny which is in store for the races of the world. Such confidence and hopefulness are right and nobling, and are indeed absolutely essential to the happiness of every rational being that gives a thought to the future. We pity the man who, looking down the vista of coming generations, cannot discern the dawn of a more glorious day for his kind. We pity the man who cannot believe that, in the course of ages,

"Evil on itself shall back recoil,
And mix no more with goodness; when
Gathered like scum, and settled to itself,
It shall be in eternal, restless change,
Self-fed and self-consumed. *If this fail
The pillared firmament is rottenness,
And earth's base built on stubble.*"

The Golden Age is a beautiful fable, but the belief in the higher glory of the future is no less beautiful, while it exalts the soul and inspires the heart with unfailing and buoyant strength.

FORCE OF EXPRESSION.—The superiority of specific expressions over more general statements is owing to a saving of the effort required to translate words into thought. When an abstract word is used, the reader

has to choose from his stock of images, more, by which he may figure to himself the genus mentioned. A specific turn, suggesting an appropriate image, effects an economy of force, and a vivid impression results.

PEDAGOGIC LIFE:

A RHYME OF TRIBULATION.

YOUNG Jonathan Jones went forth one day—
Having heard this one and that one say,
That he would have nothing to do but play—
To look for a school. It fell in his way
To meet Squire So-and-so, District Clerk.
Now the Squire was never known to skirk
In driving a bargain—in fact was selected
That the purse of the district might be protected,
And no extravagant tax collected.

Then Jonathan made his errand known ;
The Squire looked up, and in miser's tone
Inquired at once "What are your wages ?
"The man who journeys by easy stages,
As does the teacher, must work very cheap, sir ;
I'll not pay a high price—not by a heap, sir."
Now this was very consoling to John,
Very, indeed, for to school, off and on,
He had been for years—had attended the "Institute—
Had eclipses and almanacs learned to compute ;
In short, could well fill the teacher's position,
And now to hear price made the only condition,
It seemed very strange ; yet he smothered his feeling,
And tried to believe it a fair mode of dealing.

At length, after parley, by dint of good luck,
On these simple terms a bargain was struck :
"The said John to receive per month thirteen dollars,
And for bed and provision to live with the scholars !"
Or, in other words, he must "board around,"
Two words, for teachers, of ominous sound.

The morn soon came when he should begin
His pleasant labors, and he walked in
To the school-house ; small, and very low,
With windows through which the snow might blow,
And other surroundings which went to show
That the District Clerk *was* Squire So-and-so.
He found forty youths of all ages and sizes,
From twenty-five, down to the dear little prizes,
Whom their mothers had sent, to get out of the way ;
A heterogeneous, incongruous array.

Teachers his troubles all can tell,
 And how his spirits drooping fell
 When he came to form his classes ;
 A little thing, it may seem to you,
 But this forming of classes is hard to do ;
 As those well know who have had a view
 Of the subject, through teacher's glasses.
 For there were forty different books,
 And the parents told him, with scowling looks,
 That they were opposed to a change ;
 " For," said they, " it is very clear,
 That with the many test books here
 You will have a wider range,
 To show an original cast of thought,
 And that you should want any new books bought,
 To us, sir, seems very strange !"

And so with classes of every degree,
 From the Algebra down to A, B, C,
 With books of the many kinds that be,
 He settled his wrath with a jerk,
 And striving the while forever to borrow
 Strength for the day from the hope of to-morrow,
 He himself settled down to his work.

It chanced, one night, that he went to stay,
 At a tottering tavern, down by the way,
 And was forced to sit in the bar-room, there,
 'Mid fumes of tobacco, and lager beer,
 With idlers and toppers over their rum,
 Till he longed for the time to retire to come.
 It came, at length, and Boniface said,
 As the way to the attic-loft he led,
 " Sir, you must sleep in the trundle-bed,
 For with strangers to-night are we overrun,
 And the beds are all taken except this one !"
 Poor John surveyed it with anxious eye,
 For it looked like a bed whereon to lie
 Was not to rest, and, in very deed,
 Of nourishing sleep he felt the need.
 Two children were in the bed before,
 And there seemed little room for another more ;
 Too short, by ten inches, the foot-board that bound it,
 But he took a tack sidewise, and slept all around it.

He whipped little Billy Smith one day,
 And—I ask attention to what I say—
 On the history of this transaction—

For whenever the story was told anew,
With, "Says she to him," and, "Says I to you—"
The ant-hill small, to a mountain grew,
Of hideous malefaction !

Mrs. A. had said to Mrs B.,
Who "happened in" next night to tea,
She'd heard that day from Mrs. C.,
The master was awful inhuman ;
For he whipped Billy Smith till his back was raw—
'Twas the worst looking sight she ever saw—
She then went on a long yarn to draw,
After the fashion of woman,—
How, with flashing-eye, and doubled fist,
He had taken a club as big as his wrist
And beat poor Bill, on the back and head,
Till the poor little fellow was almost dead ;
That the wales on his head were as big as your finger,
That his coat was all cut to a string—or,
At least Mrs. C. had been told it was so
By the scholars, who saw it, and ought to know ;
And for one, she thought he'd better go
And tarry a while at Jericho !

But I will close this rambling sketch,
For should I strive to recall and fetch
From the well remembered past,
All of his trials and tribulations,
The sterner griefs and petty vexations,
And stories told of sly flirtations
With all their wonderful variations,
My rhyme would forever last.

My only object in writing this,
Is to show their fancy leads them amiss,
Who suppose a life of superlative bliss
To be led by those poor creatures,
Who journey around, now here, now there,
Exposed to the ceaseless wear and tear,
That all of us more or less must bear,
But which is certain to be the fare,
Of strolling, itinerant teachers.

Their lives do not flow ever smoothly along,
And their will is stout, their nerves are strong ;
Who get as reward "per month, thirteen dollars,
"And for bed and provision, to live with the scholars !"

STRAY CHAPTERS FROM THE HISTORY OF A STINGY FAMILY.

INTRODUCTION.

IN a series of papers, which I shall present as frequently as circumstances and the editor of the MONTHLY will permit, I purpose to give a few incidents from the life of one Thomas Flint—how he passed through his boy-days at the district school and the village academy, how he taught a country school, how he fared in his passage through college, and how he kept a boarding-school. In fact I shall trace his history from the time when he received his first flogging at school, until he gave his last flogging, and retired from pedagogic life, to wear himself out as a penurious farmer in Orange Co., New York. It may be necessary to introduce some of the varied experiences of the sons and daughters of Mr. Flint, to enable me the better to exhibit the lights and shadows of school-life. While I shall remember the faithful efforts of true teachers, I shall not forget some of the more notorious abuses of certain pretentious "school-keepers" and proprietors of boarding schools. That the reader may at once make the acquaintance of Mr. Flint, his family, and his peculiarities, I shall in this paper describe a tea-party which took place in his house. Inasmuch, however, as I possess a wholesome fear of bailiffs and avenging friends, I shall suppress the true names of all parties concerned, for some of them are now in the prime of muscular life. Moreover, I wish it to be distinctly understood that Flint was not Mr. Flint's true name, so that the highly respected Mr. Flint of H—, lately demised, was not the individual to whom the following details refer.

A TEA PARTY.

Years ago, tea parties in aid of missionary projects were quite common in many sections of New York State, although they are now fallen almost into disrepute. At these, the young ladies of the neighborhood made garments for the use of the missionaries. It was the duty of the lady, at whose house they met, to provide a good substantial supper. The pastor of the congregation was usually present, that he

might ask a blessing upon the provisions, the missionaries, and the industrious laborers, and that he might prevent the young ladies from breaking the ninth commandment to too great an extent, while investigating the affairs of such persons as might be absent. If he were unmarried the meetings were generally more acceptable to both parties, as they afforded him opportunity to compare the eligible young ladies, and rendered the possibility more probable that he might marry some one in the neighborhood.

It was the winter of 18— (I will not be particular about dates), and the tea parties of H— were all over with the exception of Mr. Flint's and one other. As for Mr. Flint, it was extremely doubtful for sometime whether he would incur the expense, and it was difficult to make him sensible of his duty in the matter. At length, after having consulted much with his wife, and having discovered that, by the employment of a little tact, they might manage to make the affair both pious and profitable, he consented. Accordingly, on the next Sunday it was announced, that "There will be a tea party at Mrs. Flint's in behalf of the missionaries, who are giving themselves voluntarily up to self-martyrdom for the sake of poor benighted heathen. The young ladies are requested to attend."

It was not long before the scandal-loving inhabitants of H— discovered that the proclamation was seriously defective—no time was specified; and therefore some evil surmisers conceived that the imperfection was intentional, in order that the Flints might avoid their responsibility. But this was utterly false, for on the following Sunday there was made a new announcement to this effect, "On Tuesday evening next the tea party will be held at the house of Mrs. Flint."

Accordingly, on Tuesday afternoon about four o'clock, the young ladies came together, to the number of about thirty, and shortly afterwards the minister, Rev. Hezekiah Hopewell, favored the assemblage with his presence. He was a young man, tall, good-looking, with long hair, and

spectacles. He was, moreover, unmarried, and of highly respectable family connections; so that he was a prize well worthy the attention of the young ladies. He was, however, not without serious drawbacks. He had hardly thrown off the seminary swaddling clothes, and his prayers—ah, those remarkable prayers—frequently swallowed up twenty-five minutes, while his grace seldom fell short of fifteen. Despite his faults, his presence could not be dispensed with, and was never unacceptable.

After considerable confusion in the room above, where every piece of furniture, from the antiquated window-shades to the cracked wash-bowl, had been critically examined, the ladies came down into the parlor, and formed a buzzing bee, at which some sewing and much talking was done. However, they completed all the work which they had prepared for themselves, as well as some which Mrs. Flint had by some means obtained.

Meantime, while the industrious laborers were cheerfully and noisily performing their allotted task and entertaining Mr. Hopewell, Mrs. Flint was, with equal industry, superintending the preparations for supper. The necessary labor in this department was not great, since, as will be shown, there was no great variety of dishes. It was principally mental, and consisted in devising ways and means by which to save the cake. At last Mrs. Flint, who had for some time maintained a dignified silence, seeming to have hit upon the happy plan, said to her daughter,

"Salora, my child, you know that Sarah Watkins is going to have that—ah—what do you call it?"

"Missionary soiree."

"Yes. They do get up such new-fangled names now-a-days. Well she is going to have her soiree next week, and she told me that she would give me a good price for whatever cake I had left. Now how do you think I'm going to save it?"

"Don't know."

"I do though. We've got forty pieces. Well, we'll take five plates and put eight pieces on each plate, then you see, because the girls an't forward at all, they won't take any, because there is so little on a plate. So we'll save it all."

And so it was arranged.

During this conversation and the operations connected with it, there had been much flirtation and distress of heart in the parlor. Mr. Hopewell was, as you have been told, unmarried, and seemed not a whit less willing to take due advantage of the privileges pertaining to his isolated condition, than if he had been a mere farmer. To his lasting disgrace be it said, he flirted; and when Miss Smith looked round upon her fellows with a gleam of victory in her eyes, the green-eyed monster took possession of several fair bosoms. Astonishing though it may appear, Miss Smith's intimate friend was so overcome, that she actually declared upon her honor that she could not understand, "what Mr. Hopewell could see in that hateful Polly Smith to take his fancy." None of them ever imagined, no, not for a moment, that the wily young pastor was striving to set them all at "loggerheads," in order that he might have the pleasure of arranging matters in the customary manner.

At length teatime came, and the party flocked down stairs, not especially hungry, but excessively curious to see what refreshments had been provided; for Mr. Flint was not regarded as the most liberal man in the district. They soon discovered. The bread was good, the butter bad, and the tea slops. Serious eyes looked at the cake and then across the table; while many anxious thoughts as to its distribution disturbed the guests. Soon it was "handed round," and, as it passed from hand to hand untouched, Mrs. Flint's face brightened at her success. Gaining confidence in the issue she peered over her iron-bowed spectacles, and graciously requested the young ladies not to be bashful, but to help themselves, as there was "plenty of it."

"Oh, true enough," ejaculated Mr. Hopewell, "plenty of it, indeed. Well, as you all appear too timid to take the first piece, I'll begin. Miss Smith, please pass that plate, and as soon as it has been distributed, pass the others."

This was unexpected. Mr. and Mrs. Flint and their daughters exchanged significant glances, and a suppressed snicker went around the table, as Mrs. Flint angrily muttered, "Oh! the horrible

wretch." With a pleasant smile, and apparently unconscious of the storm gathering about his head, Mr. Hopewell impressed upon all present the fact, that it was their duty, even as a matter merely of politeness, to accept fully their hostess' invitation. Tea at length was finished, and the guests retired to the parlor, leaving Mrs. Flint and her daughters to bewail the sad calamity which had befallen them. Every piece of cake had been devoured, for Mr. Hopewell, having assumed control of the establishment, had been so considerate as to pass the plates around a second time, in order that those who before, "from bashfulness," had refused it, might not be deprived of their portion of the feast. So ended the supper, alike disastrous to the finances of Thomas Flint and the influence of Mr. Hopewell in the family.

At length, about nine o'clock, after much boisterous mirth, the party was ready "to break up," and all prepared to go home. Miss Smith had been appointed to take charge of the work and to carry it to her own house, where she should keep it until it could be conveniently shipped. Accordingly, much to the horror of Mrs. Flint, she began to arrange it in bundles. In vain did Mrs. Flint, to save herself the humiliating confession of deceit, endeavor by every conceivable argument to persuade Miss Smith to leave the "things" for a few days. But the lady was inexorable, for, from the great quantity of work of which the party knew nothing, it had been suspected by the shrewd pastor, that Mrs. Flint had resorted to some species of "sharp practice;" and he was determined

that her deception should be punished. Finding it impossible to hold the clothing in her possession, Mrs. Flint thus confessed her sin:

"But there's a whole lot of my own work there. Two dresses of fine delaine, which would last us our lifetime, a petticoat, and a night-cap, and—"

"Mrs. Flint," said Mr. Hopewell, interrupting; "you have been guilty of great wrong in having brought us hither to obtain our labor for naught."

"Our labor, indeed!" cried Mrs. Flint; "our labor! What have you done but spark the girls and eat our supper?"

"You have pretended" continued Mr. Hopewell, "that your desire was wholly in behalf of the poor missionary, and have brought us here only to discover the falsity of your pretension. Now, Mrs. Flint, I believe it is the determination of the ladies that you either pay them a reasonable reward for their labor, or donate the goods to the cause."

"What is a reasonable price?" faintly gasped Mrs. Flint.

"About four dollars."

"Just what the things cost. Thomas, will you give them, or the money?"

"Give the things," groaned Flint. And so it was done. The party left, laughing; the Flints remained, sorrowing.

Now, believing that you are sufficiently well informed as to the special characteristic of the one who is to be our hero, I shall go back to his earlier days, and, in my next, give an account of his entrance into the district school, and of the first week of his sojourn there.

PETROLEUM.

THIS mineral, which has of late years assumed such vast importance in the economy of the world, was by no means unknown to the ancients, nor is it confined to the United States and Canada. Two thousand years ago, as we learn from Herodotus, the citizens of Zacynthus (Pante) were accustomed to collect a mineral pitch,

called by them "pittumen," from two wells distant about twelve miles from the city. This substance they used as a substitute for vegetable pitch in many operations. On the island of Sicily it occurred in a fluid condition, at common temperatures, and was used for illuminating purposes by the inhabitants of Agrigentum. Its exist-

ence in Farther India, especially along the banks of the Irawaddy river, was known in very ancient times. At Rangoon there are upwards of five hundred wells, yielding annually 412,000 hogsheads and supplying the whole Burmese Empire with light. In several districts in China there are numerous oil and gas wells. Solid bitumen occurs in great quantities along the shores of the Dead and Caspian seas. This was an important ingredient in the Greek Fire. It was used for many purposes among the Jews: and many have supposed that the text, Matt. v. 12, refers not to salt, but to bitumen, which was used in Jewish sacrifices and termed salt. Salt cannot lose its savor, but while soft, bitumen has a strong taste and odor, which, upon exposure, it loses. Petroleum was first discovered in Europe, in 1640, by an Italian physician. A petroleum spring near Amiano in Parma has supplied Genoa for many years. Modena, also, possesses some remarkably rich wells. On the shore of the Black sea, wells have lately been opened by some enterprising Americans and Englishmen.

In Trinidad asphaltum or solid bitumen occurs in vast quantities. Near Cape La Braye it issues from the bottom of the sea, at times, with great force and covers the surface to a considerable distance. It is collected on the shore to so great an extent, for three-quarters of a mile, as to support a very vigorous vegetation on its surface. On the same island is the remarkable Pitch and Tar Lake, which is a mile and a half in circumference and consists entirely of asphaltum. About the shores the bitumen is solid, but softens toward the centre, where it boils. In South America, at Coxitambo, asphaltum is found in a state of remarkable purity.

But with petroleum in our own country we have chiefly to deal in this paper. Its existence here was well known to the Indians long before the advent of European settlers, but like all other Indian discoveries, its history is involved in tradition. Many years ago, say the Seneca Indians, the Great Spirit informed one of their chiefs that, in a distant part of their country, there exuded from the earth an oily liquid, which would prove a balm of healing to the invalid savage. Obeying

the injunction given, the chief proceeded to the place indicated and found a dark oily liquid, which was ever afterwards used by the medicine men as a remarkable curative agent. This was the Seneca oil, so long sold in the shops and used by empirics for internal use as a medicine. The early European settlers, either from ignorance or lack of refining apparatus, paid little attention to the oil, extracting only enough to answer their limited medical necessities.

Petroleum accompanied by vast quantities of asphaltum exists in California, where it has been running to waste to the extent of millions of dollars per annum. It occurs most plentifully in Santa Barbara Co., about 320 miles south of San Francisco, where among smaller ones is a vast natural well thirty feet in diameter, which Prof. Silliman regards as one of the wonders of the world. Petroleum also exists in large quantities in New York, Pennsylvania, Ohio, Virginia, and in several other states.

In 1826, Dr. Hildreth, of Marietta, Ohio, wrote to Silliman's Journal concerning two salt wells in his neighborhood; one of which instead of yielding brine, threw out water, gas and oil, giving therefore no salt. He stated, however, that the oil was a source of profit to the company, and that he looked forward confidently to the time, when this oil would be used as a source of light in our cities. Strange to say, his statement had no effect, he narrowly escaped making a fortune, and the oil was still applied only to the manufacture of ointment.

The first steps toward a systematic working of oil wells were taken in 1853, by Messrs. Eveleth and Bissell, who formed the Pennsylvania Rock Oil Company, bought out the principal oil lands at Titusville, Pennsylvania, for \$5,000, and there established a refinery. Their efforts were very limited, and they raised but a small amount of oil, so that they did little beyond supplying liniment makers. In 1855 the oil was analyzed by Prof. Silliman of Yale College, who rendered so favorable a report concerning it that the Seneca Oil Company, with the Professor at its head, was formed and bought out the lands at Titusville, guaranteeing the proprietors

twelve cents for every gallon of oil obtained. A man named Drake was employed to carry out the enterprise: and at length, all preliminary preparations having been completed, a well was sunk and oil reached in 1859. The well yielded four hundred gallons per diem, which was then regarded as something very remarkable. Soon afterwards, in 1860, a Mr. Wood, while dining at a hotel in an Ohio village, perceived globules of oil floating on the water in the glass by his plate. He immediately bought the well and the ground about it, and, sinking a well, struck oil at a depth of fifty feet.

The success attending these early efforts produced an excitement scarcely paralleled by the gold fever of 1848-9, and which, even now, after a lapse of four years, has subsided in no whit, but has rather increased.

Petroleum derives its name from the Latin *petra*, *oleum*, signifying rock-oil. It is composed of various hydrocarbons, boiling at different temperatures, which hold in solution varying proportions of asphaltum or paraffine. In many particulars it resembles the vegetable essential oils. Its composition is of course uncertain, but the specimens analyzed give an average of carbon twenty-four equivalents and hydrogen twenty-four equivalents. Its color varies, being dependent greatly upon the amount of asphaltum held in solution. The purer varieties are quite light colored and burn without residue; while the impure, of a brown color, leave a residue of asphaltum upon distillation. Its specific quantity varies from 0.830 to 0.890. If the crude oil is long exposed to the air, it evaporates spontaneously and assumes the solid form. Petroleum has a wonderful power of extension. If a drop of it be placed upon the surface of water, it will spread over an area of several feet. It is almost unaffected by cold, retaining its liquidity at all natural temperatures.

The geology of petroleum is intensely interesting, since the mineral occurs in almost every portion of the globe, and in nearly every formation, from the Silurian to the post-tertiary, more abundantly, however, in those lying above the corniferous limestone and underlying the coal meas-

ures. That the order of these formations may be more readily comprehended, we have arranged a tabular view of the more important oil-bearing groups, giving them in the order of time, the tertiary of course being the most modern.

PERIODS.		EPOCHS.
Age of Dicotyledons.	Tertiary	Pliocene.
		Miocene.
		Eocene.
Age of Cycads.	Cretaceous	Cretaceous.
		Permian.
Age of Coal Plants.	Carboniferous	Upper Coal Measures.
		Lower Coal Measures.
		Millstone Grit.
		S. Carboniferous.
		Sub. Carboniferous.
		Catakill.
		Chemung.
		Portage.
Age of Sea Weeds.	Hamilton	Genesee.
		Hamilton.
		Marcellus.
		U. Helderberg.
		Schoharie.
		Canada Gall.
		Oriskany.
	Silurian	Upper Silurian.
		Lower Silurian.

In this table, all epochs not represented on our continent have been omitted: the ages have been divided according to their botanical characteristics.

The lowest oil-bearing group in America of importance is the Upper Helderberg, which is, as it were, a vast coral reef, stretching from Central New York under Lake Erie, and reappearing in Michigan and Canada at Lake St. Clair. The cavities of its corals are positively overflowing with petroleum, and the walls of the Second Presbyterian church at Chicago, which is built of this limestone, are covered with a coating of petroleum distilled from the rock. The Marcellus shales, with the Helderberg, are the source whence all the oil is obtained in Canada. T. Sterry Hunt regards these shales as the seat of all the oil. This, however, is, to say the least, uncertain, since it is as yet unascertained whether or not they extend to the oil regions of Pennsylvania and Virginia.

In the Hamilton formation, we find the celebrated springs at Seneca Lake and most of the oil or gas springs in the western part of New York State. In the Genesee, we find many of the Ohio wells. From the Portage, most of the oil of Oil Creek is derived. Oil has been found in all the formations from the Portage up to the Permian, but not in sufficient quantities to pay for working, except in a few instances in the coal series, and one in the Permian in Kansas. The indications of petroleum in all these are so positive,

however, as to leave no room to doubt that they are as rich as any yet explored. The great petroleum region of California, and the remarkable asphaltum formations in Trinidad and in South America, are in formations of the cretaceous or tertiary periods.

The formations enumerated above are 24,000 feet thick in a vertical direction,* and extend from Nova Scotia to Lake St. Clair, and from Virginia to the Tennessee river, giving us, according to Dr. Stevens, an oil-bearing area of no less than 200,000 square miles. Therefore the oil is not limited to Oil creek and its vicinity, but wherever any of these formations are found, there oil exists, and, in all probability, in paying quantities.

To determine in which group the oil is formed is a matter of extreme difficulty, and perhaps cannot be definitely settled until we are more thoroughly informed concerning the manner of its origin. To explain this, as many theories as there are owners of wells have been advanced; the vast majority of which, however, are frivolous and undeserving of attention.

Among the oldest and most respectable of these theories is that which regards petroleum as resulting from the distillation of bituminous coal. This theory holds that layers of coal were submitted to a high temperature, by which the bituminous constituents were driven off and condensed by heavy pressure, while the coal was "coked" into anthracite. The theory is plausible, but is utterly insufficient to account for the phenomena of origin. Bituminous coal does not yield petroleum any more than anthracite. Dr. Stevens, after a long and careful examination, asserts that he has never seen "one drop or smelled an odor of petroleum in a coal mine." Breckinridge coal, indeed, upon distillation, yielded a large quantity of petroleum, which, however, was derived from the contiguous sandrock. Another objection to the theory is, that oil springs are found in large numbers in districts far removed from coal deposits, and where,

moreover, the only formations to be found are those which underlie the coal. It has also been discovered that, although for all practical purposes the products of coal and petroleum are alike, yet there does exist a difference in their composition. To account for the existence of oil apart from coal formations, the supporters of this theory maintain, that in such districts it arises from distillation of the bituminous shales: this, however, brings us no nearer to an explanation of its origin, for in the lime, underlying the whole bituminous formation, oil is found plentifully.

Since oil is found only in cavities of limited extent, this theory appears to be strengthened, inasmuch as very evidently some of these are of volcanic origin, so that they have been regarded as all resulting from volcanic action. This sub-theory (if we may so express it) is weaker than its principal, since in the oil-creek region, there are evidences of volcanic action; so also in many other districts. Doubtless these cavities are nothing other than the result of erosion. One is impelled to this belief by the nature of the formations in which oil cavities are chiefly found, as well as by the fact that oil springs are very frequently accompanied by salt water.

Another theory, more pretentious in its scientific aspect, is, that petroleum is simply a combination of carbon and hydrogen resulting during a decomposition of water and carbonic acid in the earth, is thus enunciated. Underlying many oil-producing rocks is the vast limestone formation, of great thickness; the water falls on the earth's surface, percolates through its porous sandstones, becomes charged with various chemical substances, and at last reaches the lime, which it decomposes, setting free the carbonic acid, which in its turn is decomposed, the carbon uniting with the hydrogen of the water, while the oxygen is set free to ascend to the atmosphere, or unite with metals in the earth to form oxyds. This is a very beautiful theory, and might be plausible or possible, if there were not so many clay beds between the lime-rock and the surface; clay beds being, as is well-known, almost absolutely impervious both to gas and water. So that even if chemically possible (which is

* The Silurian is omitted in this calculation, as it is an insignificant oil-bearer. It is miles in thickness.

doubtful), the theory is physically impossible.

A careful consideration of all the facts and circumstances bearing upon the subject will convince any person that petroleum has not everywhere originated in the same manner. One general theory, however, applies to the whole. Petroleum has originated from the carbon and hydrogen of animals and vegetables formerly existing. This theory is well borne out by the facts. Among the fossils in the Ohio oil-bearing region, fish are found, whose skeletons are preserved intact, but whose soft parts are entirely converted into petroleum. The form of the fish is preserved in the cavity, which shows that the change was gradual; otherwise, the rock, then soft, would have yielded to the pressure from without, and closely surrounded the skeleton, as is the case with the fossil fish from Italy and Mt. Lebanon. At Oil creek, the shales are filled with stumps of seaweeds and land-plants, which Dr. R. P. Stevens, one of our most eminent practical geologists, thinks were, in all probability, oil-bearing plants. He is supported in this by the striking resemblance of petroleum to many of the vegetable essential oils. In the limestones of the Silurian and earlier Devonian we find cavities of large orthoceratites filled

with petroleum, of exceedingly off-odor. Besides, in later geology we have abundant proof of vegetable bituminous matter. The great accumulations of bitumen in Trinidad and on the opposite coast of America, have, beyond doubt, been formed from vegetable matter, which, for a long period has been carried down by the rivers to the ocean, where, by heat and pressure, it has been changed into petroleum.

Upon this theory, then, we may conclude that, in the lower or earlier geological formations the oil resulted from a vegetable origin, and in the later, from vegetable decomposition. Having thus convinced ourselves of its origin, we can in some measure see the advantage from the theory first mentioned. By means of subterranean heat the oil thus formed, has been distilled from the formations in which it was held, and upwards condensed under great pressure in the cavities where it is now found. In other cases, where such cavities do not exist, and the surrounding circumstances were favorable, the vaporized oil may have ascended and condensed in the cooler strata above. In this way, then, we may account for the vast accumulations of oil in the bituminous shales in the same measures.

FACTS ABOUT WATER.

WATER is a complication of contradictions. We have hard water and soft water; fresh water and salt water. It cools the fires of fever; it warms the frozen frame. It gives life; it causes death. It belongs to earth, but, never resting here, seeks the skies, and, discontented there, returns to earth again for another transient visit. The history of the erroneous views which have been entertained, respecting the constituents and characteristics of water, could not be given in a single volume. Some of the most interesting peculiarities of this element are given by an English journal, in an article which we present, with only such slight

modifications as serve to make the statements more perspicuous.

Water is at once yielding and resistant. It gives way, when permitted to do so, with marvellous facility. The slightest and lightest substance dropped upon it is admitted to its embrace, in strict accordance and proportion to its deserts and density. A grain of sand readily finds its natural place at the bottom. A bubble of static or water-bed is the easiest of compression—so easy, in fact, that some invalids cannot bear its excessive pliancy and consequent adaptation to the form of the sleeper. Hence the notion of Descartes and others, that to explain the phenomena of water

its ultimate particles must be oblong, smooth, and flexible, lying one upon another like eels in a tub. But water of a given temperature, confined, is of astonishing hardness; it is almost incompressible at that temperature; for what is a reduction of from forty-four to forty-eight millionth parts of its volume under a pressure equal to that of the atmosphere? Many solid matters—wood, for instance—can be squeezed into a much smaller than their original bulk. The packer's art has attained wonderful perfection in inclosing much in little space, but all the queen's horses and all the queen's men cannot put a quart of water into a pint bottle. You could sooner drive a nail into a solid cube of steel than you could drive one into a cube of water inclosed in a perfectly unyielding box. It is the unsqueezability of water which gives its enormous strength to the hydraulic press. The hardness of water may be felt by striking its surface smartly with the open hand; the quality is also known to unfortunate swimmers who, intending to pitch into the water headforemost, fall flat on their stomachs instead.

Pure water is at its greatest density, or heaviest and most contracted, at about four degrees centigrade, or at exactly thirty-nine degrees of Fahrenheit, that is, at seven degrees above the freezing point; but if the temperature changes either way the water expands. From the maximum density up to the boiling point, the expansion amounts to the four hundredth part of its volume—a mere nothing. If it cool below its maximum density, it still expands up to the freezing point. Consequently, water which is near the point of freezing is lighter than water that is only a trifle warmer. It therefore rises and floats on the surface, allowing the warmer stratum of water to sink. Rivers and lakes, therefore, freeze from the top downward (which would not happen were the density of water to continue to increase with increasing cold), and the fish and water-weeds remain uninjured. Were the case otherwise than it is—if our streams and pools froze from the bottom—in long-continued frosts they would become solid blocks of ice; aquatic plants and animals would

perish; and even in cases of partial freezing, the thaw and the return to a normal state of things would be much more tardy than under existing circumstances. Water still further expands at its conversion into ice; but with that we have nothing to do. Ice is not water, and with water alone are we now dealing.

Colder than the freezing-point, water is ice; hotter than the boiling-point, water is steam. But not long since, the Comte Henri Russel, after encountering fifty degrees of cold in Asiatic Siberia—and mercury freezes at forty-eight degrees—had to bear fifty degrees of heat in Australia. When we remember that water evaporates rapidly at a temperature far below the boiling-point, we see at once what a transitory, fleeting, and changeful thing it is. While we are looking at it, it is gone; before we can seize it, it slips through our fingers. Indeed, according to Boyle and others, water is a crystal melting at a low temperature, whose normal condition is that of ice. In other words, water is an unnatural state of ice; whenever it is not, it ought to be, ice. Heat dissolves ice into water just as it dissolves butter into oil. Butter and ice, nevertheless, are the proper forms for those liquids to appear in.

Pure water is protoxide of hydrogen,—is hydrogen rusted, and that thoroughly and completely, as much as iron-rust is oxyd of iron; only the rusting is done instantaneously instead of gradually. Here again we have two separate paradoxes in one. First, hydrogen is the lightest form of matter known, except ether, of which we know but little. Two volumes of this lightest gas combined with one volume of oxygen—a gas only a trifle heavier than air, form a fluid whose weight we have just been wondering at. Secondly, oxygen is eminently the sustainer of combustion, the life and soul of fire; and hydrogen is the combustible which illuminates our cities, warms our apartments, cooks our food, and kills us by its ill-timed explosions. And yet these two together constitute the agent which we daily employ, on the smallest and the largest scale, to extinguish fire!

When the scornful mother launched the taunt at her son, that he never would set

the Thames on fire, and the lad muttered, candlestick in hand, "I'm blessed if I don't try!" he was more in the right than his prejudiced parent. The Thames may be set on fire—although not with a tallow-candle—and burned. It is a question, not of possibility, but of purse-strings. Water can be separated into its two constituent gases (which is an analytical proof of what it is made), and the hydrogen used for lighting purposes. An experimental apparatus has been worked at the Invalides, Paris, and is working still, but the problem of producing gas from water, at a marketable price, yet remains unsolved. The process and its attendant essays are not open to public inspection, for voracious plagiarists and patentees would pounce upon cheap water-gas the moment it was invented.

AMERICAN EDUCATIONAL MONTHLY.

MARCH, 1865.

NATIONAL EDUCATION.—A NATIONAL BUREAU.

IT is an old aphorism that "education forms the common mind." It is no less true that it is education that forms the national mind. For what is the *national* mind but the *common* mind. The word "common" is not here used in the sense of "inferior." It rather implies that which belongs to all. In the same sense we have the common rain, the common air, and the common sunshine. They are the heritage of all. They are Nature's great boon to the universal race. They are indispensable to the material life and health of every living thing.

And so education is the life of the human spirit. It is the vital air, the fertilizing shower, the genial sunshine, to the hoping, aspiring, ever-expanding soul of man. It is the aliment of the common, that is to say, of the general mind, on which it grows and ripens into full vigor.

It is education which creates the difference between the savage and the civilized, the pagan and the Christian, the ignorant and the learned, the rebellious and the loyal. In short, not only individual men, but nations and races of men, are made precisely what they are by educational influences. Every nation thus becomes the arbiter of its own destiny, the architect of its own fortune either for weal or for woe. And education, popular education, the education of the common mind, is the Archimedean lever by which the nation may raise itself to command the universal respect of the world. In this noble work of self-elevation, the nation must make itself a potent agency. What belongs to the whole to do, cannot be properly done by a part. That which devolves upon the nation in its entirety, cannot and will not be achieved by a portion of the individual states. For the problem may be thus stated: Given a great people, required the means for securing to the greatest possible extent their intellectual, moral, social, and political elevation. These means must be commensurate with the magnitude of the end proposed. Hence the influence and power of the whole must be exercised for the benefit of the whole.

As a step toward securing a consummation so devoutly to be wished, we should establish a national bureau of public instruction. We should do for education what we are doing for agriculture, and the mechanic and inventive arts.

If such a department were to be established by the general government, with an enlightened and zealous head to preside over it, its influence would soon be felt throughout the entire land. Among the functions of the bureau of public instruction, would be the gathering together of all the facts and statistics concerning the condition and progress of education in the various States and throughout the civilized world, and the distribution of the same in public documents among the people. It might require from the State departments of education full and comprehensive re-

ports upon specified topics. It might be the depository and patron of all improvements in the material aids to instruction, and the dispenser of the knowledge of such improvements among the promoters of the cause everywhere. It might in numerous ways aim to develop a more decidedly national sentiment in behalf of general education. It might exert a powerful influence in the establishment of a course of study best adapted to the peculiar needs of the country. It might labor for the introduction into the schools of the people of such branches of study and such exercises as would foster a national spirit of patriotism. It might effect a greater degree of union, harmony, and concentration of effort, among those who, in the various States, are devoted to the cause of popular instruction. The establishment of such a department by the national government would, in and of itself, constitute a most important step toward nationalizing education. It would be a distinct recognition on the part of the government of its duty in this direction. Education would thus become a subject of national legislation; it would enter into the field of national discussion, and be recognized as an object of national interest by the people of all the States.

TEACHERS' NOTE-BOOKS.

WHETHER the teacher should be regarded as a member of one of the "learned professions" was soberly discussed, a few years ago, in one of our educational journals. As to his specific grade in the social scale, the position of the pedagogue is certainly peculiar. The point of honor, though a moot question, is one we have no disposition to discuss. We hold that the teacher should ask, not how much his profession honors him, but how much he honors his profession. This, we trust, is the popular feeling on the subject. Yet there are localities—and no one need travel with seven-league boots to find

them—in which, by virtue of his profession, the teacher possesses no inconsiderable social influence; where he is the umpire to decide all points of controversy, especially in matters relating to science, the arts, and everything having the name or semblance of learning. The diffident little schoolmistress of seventeen summers, who trembles in the exercise of her authority, has out of school an influence seldom denied, when, in opposition to a mother's opinion, the child can quote the teacher, and say, "Schoolma'am knows, I guess."

So frequent, at any rate, are the occasions in which the teacher's opinion is required and relied upon, that especial effort should be made to speak definitively, wisely, and authoritatively, when advice or information must be imparted. A note-book of classified memoranda is indispensable. Interesting facts, items of recent discoveries, historical data, novel and useful applications of general or well-known laws, are from time to time brought momentarily to the mind, generally resting there too briefly to be fixed in the memory, and thus proving of no practical utility. Now the mere writing down of such facts would certainly be one of the most effectual means of insuring a remembrance of them. But, more than that, when thus placed on paper, they may be so arranged as to be available by reference to the general subject to which they belong, even when no impression had been originally made upon the memory.

In preserving these memoranda, it is of comparatively little consequence whether a handsomely bound note-book is used, or merely detached, unbound sheets of paper; the important point is, to secure classification. In this, even, any one of various modes would be convenient and effective. The classes may be: "Science," "Literature;" "Science," "Literature," and "Art;" or, if expediency or natural preference dictate more arbitrary distinction, "Science," "History," "Natural History," "Biography," "Literature," or any similar classification.

Another important point, in noting facts for future reference, is, with accuracy of statement to combine brevity and condensation. Time is thus saved, not only when writing the facts to be preserved, but in the greater ease with which they are subsequently brought to view when required.

A rude but convenient, and, practically, very serviceable note-book, may be made of unbound paper, having this advantage over more pretentious ones, that it can be readily extended to any degree that circumstances require. It consists of half-quires, or less, of note or letter paper, the outside sheet of each having as a caption or head-line the word most clearly denoting the subject of the memoranda to which it is devoted. It is begun, we will suppose, by notes relating to archæological researches, and is marked "Antiquities."

The memoranda next made are of a physiological character; the outside sheet is marked "Physiology." The next are miscellaneous facts concerning distinguished persons; the heading is "Biography." The biographical notes are placed between the others, "Antiquities" being first; and the three classes are thus arranged alphabetically. In this way, under general heads, facts of every description may be conveniently compiled, to an unlimited extent, and any of the sheets devoted to any subject are readily accessible, for further additions or practical use. Few who have not adopted some similar method can understand the advantages to be derived from such a systematic mode of securing and fixing the rays of truth and knowledge, which often come as easily and go as rapidly as the bright figures of the kaleidoscope.

EDITORIAL CORRESPONDENCE.

EDINBURGH, February 15, 1865.

High School.—Salaries.—Dr. Schmitz.—His opinion of Ritter.—Going to the Head.—Studies.—Bible Instruction.—Schools.—Opportunities for Observation.—Educational Privileges.—Disadvantages for the Poor.—Johnston, the Geographer.

HIGH up on the Calton Hill, one of those abrupt eminences which rise with such suddenness in Edinburgh, stands the graceful High School, a building in true classic Grecian style, and one of the most perfect structures which owe their existence to the genius of the late lamented Playfair. In position, in external beauty and in internal convenience, it leaves little to be desired, and one visits it with high expectations. The eminence of the present Head Master, Dr. Leonard Schmitz, and not less of departed ones, among them Robertson the historian, and Pillans the geographer, have conferred great luster upon this institution: and I need hardly say that it is worthy of it all. The corps of teachers is always selected with extreme care, and such is the honor connected with a place upon the list, that the competition, whenever a vacancy occurs, is something truly terrific. The emolument connected with such a position is not higher than in other first-class schools, and is not so high as it was in America before the deprecia-

tion of our paper money; but the situation insures great consideration in the city and in the educational world. Dr. Schmitz, the Head Master, is well known with us by his admirable ancient histories, as well as by his reputation as a classical instructor. He is a Prussian by birth and training, but has been so many years in Scotland that he speaks English with great purity and distinctness. He was so unfortunate as to lose his right arm while a mere boy, and his appearance is much disfigured by this sad calamity, yet his face is singularly intellectual and powerful, and the impression which one receives from him is of a strong, vigorous man, wielding great influence, having vast energy, and firm will and clear insight. I talked with him much at his own house regarding my plans to translate Ritter's great work on the Holy Land, and to write his life. He entered with exceeding cordiality and interest into them, for he was a friend of the great geographer. He confirmed the impression which every one received from Ritter, of a singularly grand and noble noble nature, joined with a delightful sweetness and benignity. When the Berlin professor was last in London he met Dr. Schmitz, and said to him, "I have progressed in my work on Asia as far west-

ward as the Euphrates; there I have lost my way, and have come to London to find it." How characteristic that kind of cheerful humor was of Ritter! I have often heard him speak in just such a strain.

I asked Dr. Schmitz's permission to quote his judgment on the value of the work which I am soon to undertake. He smiled, and said: "Most certainly; but it seems laughable that a man in my position can give any testimony to the value of the writings of such a man as Ritter. It is the mouse giving a good character to the elephant."

Not much need be said about the High School and its instruction. It is large, embracing about three hundred boys, all of them paying tuition, and ranging from ten to sixteen years of age. The price charged is so high, that few families can take advantage of it, unless they are in good circumstances. This is much, very much to be deplored, and only makes a visitor prize more highly than ever our noble free-school system, open to rich and poor alike. Long may it be the most characteristic feature of our country; and may that spirit which would make our best schools private ones, and put them under the disposal and patronage of the rich, be successfully striven against, fraught as it is with such peril to the genius of the Republic.

The system of "going to the head" is retained in all the schools of Edinburgh, the High School included. Day by day the stimulus of immediate promotion is applied, and the slower way of taking rank for a week or a month, finds no favor here. The boy at the head of each class bears in every school the name of Dux, and the place is one most earnestly striven for. The teachers ply the class in every part with questions, passing not down in regular order, but with such sudden transitions, that no one's attention can flag. There is, in this way, a healthful excitement, which runs just to the border of what could be safely done, and which does not seem to overrun it and wear upon the nervous system of the boys. The "perferendum ingenium" of the Scot is never more apparent than in the school-room, where there is all the life and the heat which are associated with the American rather than the supposed sluggish temperament of the Briton. The masters walk rapidly to and fro, they are alive with talk and spirit, and excite greater intellectual activity than with us. There are some points which we should characterize as indecorum, but which are passed over without censure here—the rising in a mass with upraised hands, the snapping of fingers, and the pressing eagerly forward to catch the

master's attention. Still, the general order is good—in many schools excellent.

The range of studies pursued in the High School of Edinburgh ranges from the simple elementary English branches up to the reading of the Greek and Latin authors, usually taken in the Freshman year of our American colleges. The grammatical drill, and that in ancient mythology, biography, history, and geography, is especially thorough. German and French are also studied, and a mercantile education is given to those who require it. In one word, this High School fills the place of a first-class grammar school, a high school, and a classical school, and fills it exceedingly well.

One lesson to which I listened would have been considered quite unique with us. It was in Scripture biography, and was in the vein of a Sabbath-school catechetical exercise. Notwithstanding that the Presbyterians of Scotland are divided into the three great classes of Established churchmen, Free church, and United Presbyterian, and notwithstanding the not insignificant element infused among them of Episcopalians, Congregationalists, and Baptists, yet there is such universal accord in the fundamental principles of the Christian faith, and so little radical heresy, that this exercise is not disturbed by any sectarian dissent or wrangling, and its practical influence is doubtless excellent. Among the real wants of our scholars is thorough-going biblical knowledge. Our Sabbath-schools give doctrinal instruction, and deal well, it may be, with the heart and the conscience, but they do not give that acquaintance with the facts of the Bible, its history, topography, genealogy, &c., which, in a nominally Christian country, ought not to be overlooked in any child's education. That the large infusion of the Catholic element, as well as of sects who put little or no value on the Old Testament, must stand in the way of such simple and unsectarian teaching in our country, is much to be deplored; and Scotland may well be congratulated on a better and more wholesome order of things.

I can in this letter reaffirm what I wrote a month ago, namely, that I see little, on the whole, that is new and striking in the Scotch schools. Good teachers I meet, but no better than we have at home: good methods, but, in truth, not much better than with us. There is no royal road to learning, here, more than there, and the processes of stimulating sluggishness, of drawing out mental power, of curbing wildness, and of imparting knowledge, are quite as tedious in Scotland as in America. In no department of instruction have I seen any great deviation from our own ways,

excepting that the Scotch teacher throws the text-book aside more, and from his memory of the lesson, asks all manner of exhaustive questions upon it, till it is thoroughly compacted and impacted in the pupil's mind and memory. I have not met an instance of that repeating of an entire lesson by memory, which with us is common in certain quarters and not unknown in almost all.

Perhaps no place could have been chosen in preference to Edinburgh for studying the best Scottish schools. This city is more liberally endowed with such than any other city in the kingdom, and families are continually coming hither to enjoy the advantages of a superior education for their sons and daughters. Schools as thorough, and for pupils as advanced as the High School itself accommodates, are numerous, and some of them are just as fully attended. Indeed, that is in the American sense a private school, and though it is under civic jurisdiction in part, yet tuition is received just as in all other schools. And the prices paid for instruction are very great. I know a family which expends between one and two hundred pounds yearly for the education of four girls. A man must have a princely revenue to enjoy all these advantages at such a cost. I thought, when I heard the mother complain of this great expense, how much better is our own way at home, and recalled with fresh pride those admirable public schools of America, which are so sumptuously and so admirably supplied with teachers, that private patronage can hardly avail them, and which are open to all, welcoming the sons and daughters of toil as well as of luxury. And here in Edinburgh no man can reduce prices of tuition and succeed. If this attempted, it is said the school must be an inferior one, and so it is shunned, and soon dies out, or is compelled to charge the current high prices. All this tends to alienate the rich from the poor, to give an elaborate culture to the former alone, to check a spirit of true and noble ambition, and to promote the growth of that Tory and aristocratic spirit which even now is the secret reason of Great Britain's coldness towards us, and the wish of her governing classes that the great republic should fail.

Among the leading men who are interested in educational matters, the most entirely delightful one is Mr. A. Keith Johnston, the eminent geographer. Mr. Johnston is one of the elders in Rev. Dr. Candlish's church, and is an earnest Christian man, and a most kindly spirit. In appearance he is not remarkable—a short figure, slightly grizzled beard, and a face much furrowed; but so warm-hearted and

approachable, so full of sympathy and a desire to serve, that you are won to him at once. From first to last, during these many weeks in Edinburgh, he has been actively engaged in forwarding my interests; and this at the sacrifice of his invaluable time. Mr. Johnston is master of all the leading European languages, and the range of his geographical studies is very great. He is the geographer-royal of Scotland, and nearly all the best maps in the kingdom are engraved by him and his brothers. They have about twenty artists constantly occupied, and their work embraces every variety, from the simplest chart up to the magnificent Royal Atlas, which has given the Messrs. Johnston their widest fame. Mr. J. asked immediately about Prof. Guyot, and told me that he regarded him as the greatest living geographer. This was pleasant indeed. The two men are in truth much alike; there is more than one point which they have in common. Their beautiful Christian character, their kindness, their modesty, their sympathetic interest in all good efforts to promote the cause of science, and their profound attainments, put these two gifted and good men side by side. It was pleasant to think that the one was one of the last to take my hand in America, the other one of the first in Europe.

W. L. G.

New York, Feb. 4, 1865.

The "New Dictionary Criticism."—Its Effect.—Hypercriticism.—Dr. Webster and the Critic.—Development of Language.

A FEW words about words, if you please, Mr. Editor. Let me speak plainly. I don't like the spirit shown by your contributor in criticising the New Dictionary, as he calls it,—the new edition of Webster. I think the subject was entitled to a more dignified treatment than it received, and that there would be some palliation for my offence if I were so uncourteous as to say there was a lack of fairness and ingenuousness. This I must say, that I never was more fully convinced of the superiority of the great work in question, than I have been since reading the article referred to. The writer, for some reason or other, evidently examined Webster with the view of finding flaws. His prejudice is palpable throughout the opinion or judgment which he has rendered. Yet, what does he find of which to complain? Taking the words commencing with the letter M, as a sample of the work, and the especial subject of criticism, after some general remarks, he says: "let us look at some of the peculiar faults." All that he finds or alleges may be thus briefly stated:

1. Marquis, instead of Marquess, which the critic thinks preferable; 2. The definition of May-apple, though better than that given by Worcester, is not definite; 3. The word *mizzle* is given, which word our writer thinks should have been omitted.

True, in making these objections, the writer employs more words than are here used in stating them; true, he illustrates his article, if not his objections, with wit and anecdote; but certainly these are all the faults he finds in Webster, as far as the specimen M is concerned. I think, Mr. Editor, that I was right in saying that your contributor's prejudice is palpable. The reason of that prejudice may be inferred from other portions of the article. It is doubtless occasioned by prolonged conformity to the dicta of other lexicographers, and a natural distaste of the writer for any thing having the appearance of innovation. When Dr. Webster tells Mr. Critic to change the spelling of certain words, his pride is touched, former practices and old associations control his judgment, and though little can be said against the lexicographer, he is commended patronizingly only, and side-cuts and sarcasm follow.

We profess no sympathy with those extreme conservatives who have such a dread of progress that they can hardly tolerate the use of a new word, although it may mark the progress of human thought; nor with those who are possessed with such mistaken ideas as to the original purity of the English language, that they would exclude from use, and from the dictionary, all words and meanings that have not been handed down to us through several generations. We believe in progress. It is written in living letters in the front of all nature. Decay is found only in the rear.

True to the genius of our race and language, and the progressive spirit of the nation, the publishers of the great American Lexicon have kept pace with our living language, and we have now the proud satisfaction of possessing a dictionary containing not only the words, with their origin and meanings, that make up the English language as established and handed down to us by our forefathers, but containing also the words which represent the American progress and the thoughts of the age.

C.

MISCELLANY.

—While nineteen-twentieths of the reading public of England are much annoyed by Bishop Colenso's assaults upon the traditionary authorship of the Pentateuch, the elementary mathematical works which he wrote while a schoolmaster, and before he put his head into a miter, are among the most popular text-books in schools and for private instruction. There are fifteen of these volumes, upon the following subjects: Arithmetic, Algebra, Trigonometry, and Euclid. Were he to lose his bishopric to-morrow, the profits of these books would yield him a large income.

—The varieties of spelling of Shakespeare's name are so many that we have made a collection of the several forms of orthography employed:

Chacasper, Saxpero, Saxspere, Schacksperre, Schacksphear, Schackspiere, Schackespere, Schackspare, Schakspere, Schakspire, Shagspere, Shakesepere, Shakespear, Shakespeere, Shakspere, Shakspeyre, Shaksipere, Shakspeare, Schakspeare, Shaksperre, Schaksperr, Schakuspeare, Shaxeper, Shaxespere, Shaxspere, Shaky-spere, Shakysper, Shaxper, Shaxpere, Shaxspere, Shaxper, Shaxpeare.

—It is said that once, in the Crimea, a cannon-ball, tearing its way through a regiment of soldiers, and leaving a row of ghastly corpses in its track, buried itself at last in a hillside, opening there a spring of cool, clear water, at which, for hours thereafter, perishing battalions slaked their thirst.

—A bookseller in Philadelphia lately received an order from the country for a book called "In a Garden." He sent what was desired—Tennyson's "Enoch Arden," which the rural bibliopole having heard somewhat hastily pronounced, understood to mean what she wrote. Washington Irving used to make his friends merry about an English bookseller who ordered the "The Earl of Hamboro," instead of "The Alhambra."

—The smoke of burning wool, if applied to cuts and bleeding wounds, is said to produce immediate relief and cure, by coagulating the albumen. Ulcers and cutaneous diseases are also said to experience benefit from the same treatment.

—Report says that the lost books of the Annals of Tacitus, relating to the reign of Caligula, have been discovered in Catania, in pulling down an ancient edifice.

—Rev. Eliphalet Nott, D.D., LL.D., President of Union College for the long period of sixty-three years, is failing very rapidly. His infirmities seem to increase daily.

—The enduringness of the granite mountains belongs to the blocks cut out of them, down even to the smallest fragments. No material, accordingly, is so suitable for buildings or erections which are to be very lasting. The air can rust nothing out of granite rocks; rain can dissolve nothing out of them; rivers even may flow in granite beds for miles without making them soft—*i. e.*, unimpregnated with saline matter. Frost has little power to split them; their

component particles are bound together by a strong cohesion; plants do not readily grow on them; they remain undiscolorized for ages. In proof of this, we have the obelisks of the ancient Egyptians, still standing like detached peaks of granite hills.

—It should be known that a small quantity of vinegar will generally destroy immediately any insect that may find its way into the stomach; and a little salad oil will kill any insect that may enter the ear.

—The King of Sweden, who is a member of a society of engravers in Paris, has lately sent to them a very splendid line engraving which he executed in his leisure moments.

EDUCATIONAL INTELLIGENCE.

NEW YORK.

—The following brief digest will exhibit the principal facts and figures presented by Hon. Victor M. Rice, State Superintendent, in his last elaborate report to the Legislature of the Empire State:

The number of school houses in the State is 11,717.

The amount expended for the purchase and building of school-houses:

In the cities.....	\$376,815 84
In the rural districts.....	276,485 89

Total..... \$647,801 28

The number of volumes in the district libraries is:

In the cities.....	89,448
In the rural districts.....	1,035,992

Total..... 1,125,488

There was expended for libraries the sum of \$26,890 51, and for school apparatus, \$187,618 49.

This was nearly \$4,500 more than the year before. The entire sum appropriated by the State for libraries was \$55,000. A part of this was expended for teachers' wages under permission of the statutes, so that of the \$164,504 expended for libraries and apparatus, the major part was raised by voluntary taxation.

The number of children in the State between the ages of five and twenty-one years, was:

In the cities (estimated).....	447,489
In rural districts.....	860,858

Total..... 1,807,822

The relative percentage of attendance upon the different classes of schools, is as follows:

Colleges—Less than $\frac{1}{16}$ of one per cent.

Academies—A little more than $3\frac{1}{2}$ pr. ct.

Private Schools—A little more than 8 per cent.

Common Schools—Over 92 per cent.

Deducting the attendance (reported and estimated) from the entire number of children of school age, and it is seen that about 336,145 persons between 5 and 21 years of age, have not been in the schools.

The amount of expenditures for teachers was:

In the cities.....	\$1,554,212 18
In rural districts.....	1,589,248 28

Total..... \$3,093,460 46

An advance upon the preceding year of \$367,578 79.

There was raised by taxes for school purposes:

In the cities.....	\$1,998,479 67
In rural districts.....	674,599 62

Total..... \$2,668,079 29

The revenue from the Common School Fund was:

From the Fund proper.....	\$154,882 80
From the U. S. Deposit Fund...	165,000 00

The amount of school money and its apportionment for the year 1864-5, is as follows:

From Common School Fund.....	\$155,000 00
From U. S. Deposit Fund.....	165,000 00
State School Tax.....	1,125,749 90

Total..... \$1,445,749 90

NEW YORK CITY.

—The whole number of pupils taught during 1864, in the schools under the control of the Board of Education, New York

city, and in the corporate schools that participate in the school moneys, is as follows:

Ward Schools.

Grammar schools for boys.....	28,838
Grammar schools for girls.....	25,728
Primary schools for boys and girls.....	116,918

Evening Schools.

Male departments.....	14,808
Female departments.....	6,248
Free Academy.....	810
Colored schools.....	2,285
Normal school.....	550
Corporate schools.....	12,461

Making a grand total of..... 208,094

The number of instructors employed (corporate schools excepted) was as follows:

	Males.	Females.
Free Academy.....	27	....
Ward schools (including teachers of special subjects).....	243	1,777
Normal schools (includ'g teachers of special subjects).....	8	1
Evening schools.....	257	167
Total.....	535	1,945

The expenses of the public-school system, of New York city, for the year ending December 31, 1864, were as follows:

Amount set apart for school purposes, for the year 1864.....	\$1,787,048 84
Am't expended and appropriated.....	1,990,639 83
Excess of Expenditures and appropriations over the fund.....	\$203,596 00

The excess of \$203,596 was mainly caused by the appropriations to erect two large school-buildings.

PENNSYLVANIA.

—The late report of Charles R. Coburn, Esq., State Superintendent of Public Instruction, of Pennsylvania, furnishes full account of the condition of the Common Schools in the State, the expenditures of the system during the year, estimates of the sums requisite for the ensuing year, the whole number of pupils, cost of teaching each, the number of districts, etc., for the school year closing on the first Monday of June, 1864, together with such suggestions and recommendations as are deemed important.

Comparative statistics show that the State has nobly maintained her educational system, even amid this desolating war.

While in some respects there has been a falling off from past years, the total results are encouraging to the friends of education, especially when it is remembered that one section has been twice invaded by the rebel army, and portions of several counties have been laid waste by the ravages of war. In the midst of all these

discouragements and commotions, she has steadily kept on in her course, with a characteristic firmness in her efforts to educate and prepare for usefulness her sons and daughters.

CALIFORNIA.

—The annual report of John Swett, Esq., State Superintendent of Public Instruction, in California, is an able and interesting document. The statistics are drawn out in careful detail, and exhibit the rapid progress made by that young State. The number of pupils in the State Normal School, in 1864, was ninety-two. Mr. Swett deprecates the small percentage of regular attendance by the pupils in the schools at large, and he advocates a larger appropriation of money for the school-fund. Mr. Swett makes positive assertions, and puts down the figures to show that he is right; he evidently knows what he is about. "The fossil teachers of the Old Red Sandstone formation," receive no mercy at his hands. He belabors them soundly for their *abuse*, and not *use* of the text-books. He says, "there is a fancy for lumbering children with books bigger than they can carry." The Superintendents of other States may truly say the same. The year has been a disastrous one for California, because of the unparalleled drought. In the schools, there has, however, been progress, in the employment of better teachers, in the use of better text-books, and in the deeper interest of parents and the public. He looks forward to another year with sanguine expectations.

—The bill before Congress for the support of the Military Academy at West Point, for the current year, appropriates \$282,504.

—Several schools for contrabands are located on the farm of Gov. Wise, eight miles south of Norfolk, Va.

ENGLAND.

—During nearly three years, the Queen's Commissioners have been examining ten of the great schools in England. Their reports will entirely disabuse our minds of the opinion that Eton, Harrow, Rugby, and Winchester, are equal to our colleges. The truth is that they are vastly inferior. Their teachers are of the old class, narrow-minded and bigoted in their views, doing nothing to render the studies attractive to the pupil; so that the latter acquires a distaste for study and becomes riotous and insolent. Twenty-one professors and tutors of Oxford and Cambridge Universities have complained of the character of students received from these in-

stitutions, denouncing them as not only unprepared in Latin and Greek, the only prominent studies during ten years preparation for the University, but also, as so sadly deficient in the elementary branches, as to render it necessary to incorporate the rudiments of arithmetic and grammar with the University course. One of the Fellows of Oxford states that sometimes he has had to remind his fellow-examiners for B. A. that they are not at liberty to "pluck" for bad spelling, bad English, or worse writ-

ing. If these statements are true, as they doubtless are, the superiority of Eton and Rugby over our free schools is not so decided as some have supposed.

—The "Working Women's College," lately opened in Queen Square, Bloombury (Eng.), which has just finished its first term, appears to have had a fair measure of success. The entries of students have amounted to one hundred and forty; the largest classes being English Literature, French, Drawing, Arithmetic, and Physiology.

CURRENT PUBLICATIONS.

A good school story is rare, and so it gives us pleasure to compliment an old one. Locke Amsden¹ is one of those narrations which seem never to grow old. The story is that of a young farmer boy, possessing remarkable mental powers, but altogether unappreciated by his father. An accident causes a stranger to visit his father's house, and through this person's influence, Locke Amsden is enabled to push forward. By the aid of friends, found as he passes along, he contrives to graduate at college, after which he devotes himself to the improvement of common schools, and is successful. In the end, he marries the daughter of his early benefactor, and goes to Congress. The story is well told and unaffected. It gives a very considerable insight into the manner of conducting country common schools.

From time to time attempts have been made to change the earlier Latin text-books, but only with doubtful success. We have had *Viri Romæ*, *Historia Sacra* and *Vita Washingtonii*. The latter was published some twenty years ago and was really an excellent book, but it has in some way fallen into undeserved oblivion. We have before us a new book, by Professor Brooks,² giving brief sketches, in Latin, of noted Americans from the time of Columbus to Jackson. This is a much more practical and available work than those preceding it. The Latin is simple and pure, and the sketches are well written. The book is profusely illustrated with medal portraits of its leading men, is printed on tinted paper and has an excellent lexicon. It will prove a valuable text-book, and should be introduced, as far as possible, into the elementary course.

Too little attention has been paid in Amer-

ica to the study of philology. Mr. Marsh is almost the only one of our countrymen who has acquired a European reputation in this department of science. Its importance, however, is so great that we greet with pleasure any American work on the subject, although in many respects it may be extremely defective. Mr. Wilson³ has produced a work of great originality, which is certainly the result of almost incredible labor. Its first part treats of the "Elements of Language," as he terms the parts of speech, giving us their history and the variety of formations in different languages. The second portion treats of the history of languages. The work is remarkably free from abstruse disquisitions, and is especially valuable as a pioneer in comparative philology. It has been corrected by Dr. Taylor Lewis (to whom it is dedicated), who endorses it very zealously. The work is deserving of more extended notice, and we shall, as soon as possible, make it the basis of a paper for the MONTHLY.

Certain kinds of text-books on Elocution increase with great rapidity. There is little excuse and no necessity for the publication of new ones, unless they are superior to those already published. Moreover every person has not the ability to make a good book upon this subject. Mr. Fowle has attempted to produce a book to supersede all others on Elocution. It is as good as many of its class, but does not happen to possess enough superiority over others to apologize for its publication. The author manifests considerable ability. Indeed, he must have a very high estimate of his own ability; for we find that one-fifth of all his "pieces for declamation" are under his own name. If Elocution were

(1) LOCKE AMSDEN, OR THE SCHOOLMASTER: A tale by the author of Mary Martin, &c. Boston: Chase & Nichols. 12mo, pp. 231.

(2) *VITÆ VIRORUM ILLUSTRUM AMERICÆ*, a Colombo ad Jacksonum: notis Anglicis illustratæ, necnon vocum omnium interpretatione instructæ. Auctore N. C. BROOKS, LL.D. Novi Eboraci Imp., etc., A. S. Barnes et Burr. 12mo, pp. 336.

(3) PHRASIS: A treatise on the history and structure of the different languages of the world, with a comparative view of the forms of their words, and the style of their expressions. By J. WILSON, A. M. Albany: Joel Munsell. 8vo, pp. 384.

(4) THE FREE SPEAKER: A new collection of pieces for declamation, original as well as selected, intended as companion to the "Hundred Dialogues." By WILLIAM BENTLY FOWLER. Boston: Chase & Nichols. 12mo, pp. 336.

a new branch of study, and if there were a scarcity of "books on Elocution," then, perhaps, we might be better able to appreciate Mr. Fowle's "Free Speaker."

Although Mr. Fowle has not been eminently successful in his "Free Speaker," he deserves commendation for his "Parlor Dramas." Too little attention has been paid to the development of colloquial elocution, and Mr. Fowle's book fills the gap which has so long existed. His dramas are generally brief and interesting, and are well adapted to their purpose. The author, however, has laid himself open to censure by stating that the dramas were hastily written. He certainly has not been wise in confessing to a hastily prepared and unfinished work. He should have delayed its publication until he could carefully finish it. As it is, however, the book is a good one. The work is in good type, printed on good paper and well bound.

There is no greater burden for the pupils of our schools than "Composition Writing." Generally, the whole system of teaching "Composition," is radically wrong in the public schools as well as in our private schools, academies, seminaries and colleges. "Writing Compositions" from a "sense of duty" does not profit any one very much. Mr. Davis has rendered teachers under obligations to him in the preparation of his little book entitled "Composition Writing." We find in the book some inadmissible expressions, such as, *let each "say his say."* Mr. Davis adroitly throws the apologetic quotation marks over this phrase; but we cannot excuse him for undignified and improper expressions, even in the presence of children. Indeed, precise and careful use of language is most important before children.

The author's plan is to begin the exercise of composition as soon as the child can talk; for "Composition is simply the expression of ideas in language, spoken as well as written." His first lessons, are adapted to the capacities of children in the Primary Schools. He uses the slate and blackboard freely in leading his pupils to acquire the facility of writing compositions without knowing it. He feels that the pupil, at the outset, does not need "first lessons" in rhetoric, personification and hyperbole, reduced to the juvenile comprehension. Nursery compends of formal rules, gathered from larger works, may, like infantile logics, be ingenious in design, but are not practical in effect.

Mr. Davis' book is unpretentious; his lessons are simple and practical. While they are intended for elementary classes, they can be used with decided profit in our High

Schools. We have not lately seen a book which contains so many good hints, and so much plain common sense within so few pages. Let Mr. Davis now prepare another work, with more extended lessons, and he will render Educators under still greater obligations to him.

One of the great defects in the prevailing systems of education is, that the study of our constitutional jurisprudence is omitted altogether or is deferred until our youth are required to participate in the active duties of society; and too often it is regarded as necessary to lawyers and politicians only. It is, however, gratifying to find among the people at large a growing tendency to inquire into the origin, structure, and principles, of our political institutions. Reason and common sense suggest that such information cannot be acquired too early in life, and experience teaches us that it cannot be too widely diffused. Some years ago Dr. Duer published a book⁷ which should have been generally used in our schools and colleges. It furnishes just the information to which we allude. Where the political rights of all are equal and the rights of the obscurest individual has a voice in the election of his rulers and is himself eligible to the highest stations in the government, such knowledge seems absolutely indispensable. And yet it is a reproach to some of our colleges that graduates are sent forth who are more familiar with the Constitution of the Roman Republic, and the principles of the Grecian Confederacies, than with the fundamental laws of their own country. The stirring events of the times in which we live are teaching us the value of a knowledge of government, and we hope for radical changes. The reformation must begin in the schools.

One of Mrs. Willard's works, a condensed history of the United States⁸ translated into Spanish, has been revised and extended, bringing down dates to the breaking out of the Rebellion. It is a comprehensive work, saying much in few words. The work of translation appears to be well done. But, either from oversight of the editor or as a result of the patching up of stereotype plates, the book is seriously marred by a want of uniformity and consistency in orthography. Pure Spanish spelling, and that of the Spanish Colonies, are found on the same page, sometimes in a single paragraph. As a salable work it will doubtless be successful in the localities for which it is probably intended. It belongs to a class of works which can be multiplied with great advantage to our national interests.

(3) PARLOR DRAMAS; or Dramatic Scenes for Home Amusement. By WILLIAM B. FOWLE. Boston: Chase & Nichols. 12mo, pp. 312.

(6) COMPOSITION WRITING: A Practical Guide containing Model Lessons and Hints to Teachers and Pupils. By W. W. DAVIS. 12mo, 52 pp. Schermerhorn, Bancroft & Co., New York and Philadelphia; Geo. and C. W. Woodward, Chicago.

(7) CONSTITUTIONAL JURISPRUDENCE OF THE UNITED STATES. By WILLIAM ALEXANDER DUER, LL. D., late President of Columbia College. 18mo, pp. 420. New York: Harper & Brothers.

(8) COMPENDIO DE LA HISTORIA DE LOS ESTADOS UNIDOS: ó República de la América. Por ENMA WILLARD. Traducido al Castellano por Miguel T. Tolón. Revisada y continuada por Alberto de Tornos. New York: Barnes & Burr. Cloth, 12mo, pp. 462.

THE SPIRIT OF OUR EXCHANGES.

THE *Massachusetts Teacher*, which has no superior among educational journals, has an able article in the "Editor's Department" for February, on the "Spirit of the Public Schools of Great Britain." In contrast with the usual courteous demeanor of American students towards their teachers and professors, the editor "presents the graphic picture of a remarkable scene witnessed at the last annual opening of the University of Edinburgh, and sketched in the AMERICAN EDUCATIONAL MONTHLY for January, by W. L. G.," Rev. Wm. L. Gage, formerly an esteemed contributor of the *Massachusetts Teacher*.

"Imagine that it were announced in the *North American Review*, that, in a certain distinguished American school, 'the junior boys are compelled to get up at half-past three or four o'clock to light fires for seniors who get up at five'; that 'juniors are required to provide for the seniors, under penalty of a thrashing, stationery of various kinds'; that 'the seniors have the power of inflicting painful and degrading punishment on juniors for any thing which they may please to consider a grave moral offence'; that 'the seniors are in the habit of delegating this power to boys in a class below them'; that among the boys 'there is a very sinister vocabulary denoting different kinds of punishments, one of them dangerous as well as brutal'; that 'there is a general relation between the upper boys as masters and the lower boys as servants, from which a thousand petty acts of vexation and tyranny arise.' We say *imagine* such an announcement to be made; for such a state of affairs never has existed in an American school, and never can exist so long as our free institutions exist, unburdened by an overbearing, hereditary aristocracy.

"And yet precisely these statements we quote from the *Edinburgh Review*, in which they are made with especial reference to the famous Westminster School; while at the same time it admits that the fagging system prevails to a greater or less extent in the other renowned schools of England.

"What shall we think of that state of society which suffers one portion of the boys in public schools to act the part of master—oftentimes tyrannical, too—and the other that of servants? Can we not recognize in the tone of English schools the very spirit which makes England bluster and bully, when she can do so safely, and cringe and truckle, when to do otherwise would be unsafe?"

The *Nassau Quarterly* is conducted by the Senior Class of the College of New Jersey, Princeton. The last number begins with a really excellent prize poem, "Pro Patria," which would be creditable to any monthly

or quarterly in the language. "Conflict" is a well-digested, clear, and philosophical paper, from which we would quote, did our space permit. "The Isle of Achill" is marked "Poetry" in the table of contents, but it lacks many of the elements of real poetry. Throughout this number rather too much "poetry" is attempted. "Genius" is one of the better prose articles; "Positive and Negative Character" is well prepared and interesting; "Stray Leaves from a Freshman's Portfolio," is a lively and ingenious paper. The Editor takes special care to disclose his political views. When years shall mature his judgment, he may doubt his wisdom in this matter. He gives a very pleasant account of the game of base-ball of the Nassau Hall and the Williams College clubs, played in November, 1864. The *Quarterly* contains in all about a score of papers, manifesting more than the average merit of undergraduate essays. A judiciously conducted college quarterly like this must prove profitable to students, and should be published in every college.

Silliman's Journal for January contains: "Benjamin Silliman," "Geological Survey of California," "Mineral waters of Bath," "On the Nebular Hypothesis," "On Brushite," "Planetology," by Professor Hinrichs; "Contributions to Chemistry," by Prof. Gibbs; "Correspondence of Prof. Nickles," with its usual variety of scientific intelligence. It is somewhat reduced in size, but is no less valuable.

The *Monthly*, edited at the University of St. Mary of the Lake, Chicago, Ill., is a new monthly devoted to "Catholic Interests, Literature, Art, and Science." The number before us is a good one. Among the articles we notice "The Artist's Daughter," "An Old Roman Town in Germany," "The Silver Arrow"—a birth-day story; "The Editor's Omnibus" contains "Life of a Great Man," Chinese Correspondence, and Poetry—"To my Pipe." The Miscellanea is well selected.

The *Student and Schoolmate* for February has a continuation of the story of "Out in the World," "Campaigning," the interesting account of "Lobsters," "Spirit of the Hour," poetry; "Try Again," "Retaliation," a very pleasant story for children; "Notes from Freiberg," a new piece for Declamation, "Relief for Savannah," by Edward Everett. This declamation, as usual, is carefully marked for gestures, and gives illustrations to show the proper positions, etc. The Original Dialogue this month, is "On Truthfulness," and most excellent it is, with its pointed moral for all boys and girls who go to school. [The price of the *Student and Schoolmate* is \$1.50 per annum. It is clubbed with this MONTHLY at \$2.50 per annum.]

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THE ALBANY ACADEMY.

THE Albany Academy is one of the oldest of those institutions which, established under the Regents of the University of the State of New York, have done so much to advance the interests of education in the Empire State. As a type of its class, we will give a brief sketch of it. This institution celebrated its semi-centennial anniversary in June, 1863; and it is chiefly from the admirable historical discourse of Orlando Meads, Esq., of Albany, and the eloquent and beautiful commemorative oration of Hon. Alexander W. Bradford, of New York (both of them Alumni of the Academy), delivered on that occasion, that we glean the following facts.

The charter of the Albany Academy was granted in 1813, during the war with Great Britain. One can readily believe that great struggles for national life, with the mental activity engendered, are conducive to the inauguration of great educational and humanitarian schemes. Men's brains become fertile under the stimulus of momentous events, and what their hands find to do, they do with a will and a might of which "in the piping times of peace" they are incapable.

The movement for founding the Academy began in the Common Council, during the mayoralty and by the instigation of Philip S. Van Rensselaer. Property and grounds valued at \$20,000 were appropriated by the city; and after liberal private contributions for a suitable building, the Common Council supplemented their former grant by a further donation. The building which was erected cost \$90,000, and is still one of the chief architectural

ornaments of the city. The charter, granted March 13, 1813, enumerated the following trustees: Stephen Van Rensselaer, John Lansing, Jr., Archibald McIntyre, Smith Thompson, Abraham Van Vechten, John V. Henry, Henry Walton, William Niell, John M. Bradford, John McDonald, Timothy Clowes, John McJimpsey, Frederic G. Mayer, Samuel Merwin, and the Mayor and Recorder of the city, *ex officio*. Dr. Benjamin Allen, of Cambridge, Massachusetts, was principal and professor of mathematics, Rev. Dr. Joseph Shaw professor of ancient languages, and Moses Chapin (now Judge Chapin, of Canandaigua) English Tutor. The cost for tuition was at first \$8 per quarter, but at the end of the first year it was found necessary to raise the charge to \$12.50 for the classical, and \$10 for all other students. Both the trustees and the faculty had exalted ideas as to the character of the instruction to be imparted. The examination was conducted with marked rigor, and the discipline was of the old-fashioned kind, in which the rod was used with unstinted liberality. On one occasion, it is narrated, when some misconduct of the students was brought to their attention, the trustees adopted a resolution inquiring why the usual and proper chastisement had been omitted. Mr. Meads adds: "It is due, however, to the professors to say that they were rarely, if ever, justly chargeable with any neglect of duty in this respect."

At the opening of the second academic year, Rev. Isaac Ferris (now Chancellor of N. Y. University) was appointed classical tutor. During the summer of 1817, Dr

Allen having resigned the principalship, Theodoric Romeyn Beck, M. D., was appointed his successor. This position he held till 1848, and by his zeal and learning, and his unsurpassed administrative abilities, soon succeeded in raising the institution to the highest reputation. The classical department, under Dr. Shaw, and after his death, in 1829, under Dr. Peter Bullions, attained great distinction. The drilling under these hard-headed old Scotchmen was, as is well remembered by their pupils, of the strictest description. The grammar was daily repeated in all the classes, from the lowest to the highest. The course of reading in the Greek and Latin classics was as extensive as in most colleges. Every means was employed to give a mastery over the languages—parsing, scanning, written translations from Greek and Latin into English, and *vice versa*. "A false quantity," says Mr. Meads, "struck every ear like a discord, and was an offense, never suffered to pass unnoticed, that brought down swift vengeance upon the offender. Nor was this all; as the student advanced to the higher forms, his attention was directed to the noble thoughts and the felicities of expression of those grand old writers whose works have become the models on which the intellectual tastes of the young have been formed in all succeeding ages." It is believed that this high reputation which the institution gained for classical instruction under Drs. Shaw and Bullions was maintained afterwards by their successors in the same department, Dr. William H. Campbell, Rev. William A. Miller, and the present classical professors.

The mathematical and scientific departments early attained an equal footing with the classical. Dr. Beck's labors in science were enthusiastic and inspiring. Not only to his own pupils, but to the people of the town, did he communicate his enthusiasm for scientific pursuits. He opened the lecture-rooms of the Academy to the citizens, and delivered valuable series of lectures upon chemistry. He formed a scientific society, holding its meetings at the Academy, which was one of the pioneers in the formation of collections in Geology and Natural History. Long before the present State cabinet was founded, these collec-

tions had attained great proportions. From his position in the capital of the State, Dr. Beck exerted great influence, and was unwearied in promoting the geological survey. Indeed, one is astonished at the multiplicity and magnitude of the enterprises in which he was engaged. In addition to those already mentioned, he was mainly instrumental in founding and collecting the present magnificent State Library. He was a regular lecturer at the Fairfield Medical College, and at the Albany Medical College. He made the study of medical jurisprudence a specialty, and prepared a work which has become a standard in both hemispheres. Amid all, he did not forget the minutest of his duties at the Academy. He had a passion for details, for collection and classification. All the records and catalogues of specimens of the Academy and Institute are in his own handwriting. He kept a register of all the students who entered and left the Academy, and was not content with this bare record, but followed them into life, noted facts about their career, cut out scraps from the newspapers concerning them, and followed them till death carried them from his view.

"And there was another professor," says Mr. Bradford, "whose life has been spared, and his fame extended, until the respect and applause of the world have wreathed his brow with laurel,—who rose with the sun to instruct his pupil eager for knowledge,—who, giving his heart and soul to the duties of the school, had yet time for exploring the deep paths of science,—who, with his wires and silk thread, winding miles of insulated copper wire, in the Commencement Hall of the Academy, patiently toiled his way, to the demonstration of the magnetic power of the galvanic battery, and, years before the invention of the telegraph, proclaimed to America and Europe the means of communicating by the electric fluid." Prof. Henry was connected with the academy from 1826 to 1882, during which time, as intimated above, he prosecuted his researches in Electro-magnetism. He was the first to make known the fact that the current could be driven through wires of great length. He had a stretch of wire more than a mile in length,

extending in circuits around one of the rooms of the academy building, and by his electro-magnetic apparatus projected the current through the entire length, so as to ring a bell at the furthest end. His discoveries were announced in "Silliman's Journal" in 1830 and 1831. With all his ardor in scientific investigation he was an able instructor. He had remarkable inventive genius in mechanical contrivance, and many valuable pieces of apparatus still remain in the institution which were contrived by him, and constructed in a great measure with his own hands. At the meeting of the Association for the Advancement of Science, held in Albany in 1851, Prof. Henry said:—The Albany Academy is my *Alma Mater*. . . The Academy was and I presume still is, one of the first, if not the very first institution of its kind in the United States. Its system of education is more extensive and more thorough than in many colleges in our country. It early opposed the pernicious maxim in education, that a child should be taught nothing but what it can perfectly understand, and that the sole object of instruction is to teach the pupil to think. The Academy adopted the more philosophical maxim that the child should be first taught *to do*; that *art* should precede *science*."

The policy of the Academy, its systems of instruction, were mainly determined by these men; and their successors have had little to do except to follow in the road so ably marked out for them. The plan has been to make it what the city government intended it to be when it was endowed,—a great school for training the boys of Albany for their future employments in life. Hence it could not be a mere school for preparing boys for college. A majority of those who seek an education within its walls, never enter a college. There they must receive all the education which they ever get. They must be trained, therefore, in all the subjects which, considering their age, would constitute a liberal education. Their classical drill must be something more than just sufficient to fit them for the Freshman class in college. Their mathematical education must be such that without further training they will be prepared for all commercial and professional pursuits. In its

course of study it was intended to have the place which the German gymnasia fill in the Prussian system of education.

It was also an aim in the management of this school to furnish a continuous and progressive school of studies suitable for boys of all ages. Facilities for education were therefore afforded for very young boys, so that the principles which were to govern their education in later years might also be employed in their earlier. The advantages of the plan have been apparent. The greater number of the best students in the higher classes are those who have begun their education in the lowest forms.

The students of the Academy are divided into two departments, called the academic and the preparatory. The division is made strictly in accordance with the advancement of the pupil. Each department is provided with a study-room, presided over by one of the faculty. The recitations are conducted in separate rooms, where only the teacher and his class are present. Each department is divided into classes according to advancement, and the pupils are passed from one to another after an examination. The studies of each class occupy a year. If a student should enter the lowest class, and remain a year, and no longer, in each, he would require nine years to complete the whole. At the end of the course a diploma or certificate is bestowed upon the pupil. In the annual catalogue the names of the pupils are arranged in their classes according to their grade during the year. Four medals are bestowed each year for proficiency in various branches of learning; for Mathematics, for Classics, for Natural Philosophy, and for English Composition. Two prizes of books are also now offered by the principal for English Composition.

The daily session of the school extends from 9 A. M. to 2 P. M., with a brief recess at noon. At the opening of the session each morning the entire school is collected for a religious service. The academic year extends from the first of September to the first of July, with a vacation of a week at the Christmas holidays. The Academy receives annually a small sum from the Board of Regents, as its share in the distribution of the Literature Fund, and a small sum

from the income of the Delavan Fund for the education of poor boys. With these exceptions the entire income of the institution is derived from its tuition. The charges for tuition vary with the department and class from \$6 to \$15 per quarter.

The patronage of the Academy is mainly from the city of Albany and its immediate suburbs. It has no boarding establishment in any way connected with it, and hence it is not desirable to seek for or secure any considerable number of pupils from abroad. The number of pupils in attendance averages from 200 to 300, of whom about one third are pursuing classical studies. About five or six leave the academy each year to enter college.

The trustees have established a system of district-school scholarships, by which one pupil from each of the public schools of the city is received and educated free of charge. Henry W. Delavan at his death bequeathed to the Academy a fund of \$2000, the income from which should be used to pay the tuition of such a number of poor boys as the income would allow.

On the close of the academic year there is an annual "Exhibition," at which about a dozen of the oldest and ablest boys of the school deliver original orations. These exhibitions compare favorably with most college commencements. The medals for proficiency in various branches are on those occasions awarded, and the diplomas and certificates bestowed.

The faculty of the Academy consists of a Principal who is also the professor of Mathematics and Natural Philosophy, a professor of the English Language and Literature, a professor of Greek, a profes-

sor of Latin, a professor of German and French, a Superintendent of the Preparatory Department, and four or five assistants. The discipline is in the hands of the faculty and consists of about the usual proportions of moral and physical suasion; with perhaps a less tendency to the latter than in the earlier days of the institution. The tone of feeling among the boys is healthful. The amount of earnest study exacted and obtained is nearly or quite all that is consistent with good health and good spirits. There is observable less of that over-drilled, spiritless style of work than exists in most city schools.

A few words will bring the history of the institution down to the times we have been describing. After Dr. Beck's resignation in 1848, Rev. Dr. W. H. Campbell, now President of Rutgers College, was elected principal—which place he continued to fill till, in 1851, he was called to the Theological Seminary at New Brunswick. Dr. George H. Cook was his successor, and continued till, in 1853, he was elected Professor of Chemistry in Rutgers College. He was followed by the Rev. William A. Miller, whose recent and early death has deprived the Church of one of its first minds and most brilliant scholars. During the fifty years of its existence, nearly 5000 students have been educated within the walls of the Albany Academy. Some of them fill the most distinguished places in the country. They are found in every business and employment of life. It can well be believed that their early training was not without effect upon their subsequent career. The prospects of the Academy are in every respect favorable.

POPULARIZING GEOLOGY.

DURING the last two hundred years, all enlightened portions of the world have become familiar with the doctrines of modern Astronomy. The figure and motions of the Earth, its relations to the sun, moon, and planets, the nature of the fixed stars, these and kindred topics have been discussed in formal treatises, repeated

in the language of common life, in school-books, in newspapers, in sermons, invested with the charms of poetry and eloquence. In short, they enjoy all the privileges and immunities of established truths. In addressing each new generation of men, they have, like hereditary governments, the immense advantage of appealing to an undis-

puted supremacy in the past. And when the more startling problems of Astronomy are brought before us, such as the velocity of light, the weight of the planets, and the distances of the stars—problems, the solution of which almost forbids us to pronounce any others insoluble—it is vastly easier for us to accept these statements from the fact that we cannot remember the time when we first learned the primal truths of Astronomy, that the earth is round and revolves about the sun.

There is another branch of modern science that stands not a whit behind Astronomy in the grandeur, the certainty, or the value of its conclusions, but which shares very unequally with it in popular favor. *Geology* can substantiate as many claims upon general acceptance as Astronomy, but thus far instead of recognition and welcome, it is met with a large measure of aversion and distrust.

Its periods demand of the mind as lofty a flight as do the spaces of Astronomy; and if the forces which work within its domain cannot claim for themselves the magnificence that belongs to the all-embracing law of gravitation, they find a compensation in the deeper interest that must always surround the history of life on the globe.

It differs from Astronomy, it is true, as to the modes of reasoning by which it reaches its conclusions, but these conclusions are none the less reliable on this account. If nothing can be counted sure except that for which a mathematical demonstration is provided, then we are poor indeed. The truth is, no man ever approaches the study of Geology in the teachable spirit, which, as Lord Bacon observes, the kingdom of Nature and the kingdom of Heaven alike demand, without becoming a disciple. It must be acknowledged that many instances can be adduced in which men under the tyranny of a foregone conclusion have acquired a certain degree of familiarity with Geological facts, while still rejecting all Geological theories; but such cases prove nothing. Astronomy had a precisely similar experience two hundred years ago.

As to the value of Geological truth, it is only necessary to observe, that while the "sermons in stones" have as potent a per-

suation as the "stars in their courses," they have a hundredfold more modes of access to the mind.

But while we meet on every side with the recognition of the truth that the earth is *round*, how seldom do we hear the equally momentous deduction of Geology, that the earth is *old*! The line of Astronomy is gone out through all the world, but Geology is like the voice of one crying in the wilderness. The praise of Astronomy is perfected out of the mouths of babes and sucklings, while men can be found even in the most cultivated classes of society who declare that they know no reason for believing the earth to be more than 6000 years old. And a much larger portion of the educated class, while yielding a grudging recognition of the existence of Geology as a science, disparage its conclusions and discard its results, and deem themselves to be acting the part of magnanimous champions of the truth when they propose a compromise between Geology and its opponents—a compromise that must have precisely the same elements which would have been required for one between Galileo and the Pope, on the question of the earth's rotation. He who believes that the earth was created 6000 years ago, believes a proposition that stands in the same relation to science that the Ptolemaic Astronomy maintains. Such a doctrine is in no respect more tenable or respectable than that which the Pope sought to establish by the terrors of anathema and imprisonment—that the earth is the center of the solar system. But popular opinion at the present day, while it relegates to lunacy the advocate of the earth's immobility, passes no severer judgment on the denial of the claims of Geology than that of over-caution—a slight leaning to conservatism in matters of science. Every man who is entitled to pronounce an opinion on this subject, knows that the earth is old with an age that 6000 years can measure, it is true, but only as a single step can measure the breadth of a continent. The immense antiquity of the earth is no longer open to question, in any other sense than the tenets of science are always open.

The explanation of these facts it is not

difficult to afford. The hostility which Geology encounters in a vast number of highly cultivated and influential minds is due to its supposed bearings on religious truth, confessedly man's highest interest. Genesis, it is declared, cannot be reconciled with the demands of Geology. But Genesis is no more at variance with Geology than it is with the Copernican system of Astronomy. Has then the Bible lost its power to bless the race, since the foundations of this system were "firmly fixed, no more to move?" Has it not rather found in Astronomy a better instrument for training the mind to the high and reverent thought which it demands than it ever had before? This whole opposition, no matter how worthy the interest in which it is undertaken, is most shortsighted and suicidal. It is the only version which the nineteenth century will allow of the Pope's persecution of Galileo. The ground of controversy is the same, and the results will not be at variance. It should be a matter of profound gratitude to those who receive with an impartial welcome all religious truths, that our two ablest exponents of Geology are men of such devout and reverent minds—Agassiz and Dana, either of whom, were it not for the other, could be written "*facile princeps*." Agassiz has unfolded with a marvelous intuition the plans of nature in the structure of the animal kingdom; while Dana has written not only the best treatise on Geology yet given to the world, but has in so doing furnished a stronger argument on Natural Theology than Paley ever wrote.

The want of familiarity with Geological conclusions which generally prevails is another cause of the distrust with which they are received. When they meet the ear, they have a paradoxical sound. They are not rejected because they have been weighed in the balance of the understand-

ing and have been found wanting simply because, on the ground which they claim for themselves, other and opposite beliefs are already established. It might be expected that what a liberal education would remedy this in all the minds which come under its influence, but we find, on the contrary, it does not tend to this result. Fifty years of the approved curriculum devoted to the literature and myths of certain heathen nations, which flourished before the Christian era; while Geology, Chemistry, and other allied sciences are "damned with the faint praise" of superficial lectures.

The remedy for this evil lies with us, much more than with any other. They can bring to the support of Geology the same subtle but powerful influence which Astronomy already enjoys, and which is so important an element in its hold on the popular mind—the influence of impressions. They can make it a part of the training for the rising generation to believe that the earth is *old* as that the earth is *new*. The truth demands that they give as much emphasis to one doctrine as to the other, that they devote to the illustration of the *age* of the earth at least a portion of the ingenuity which they now spend upon its *form*. And when they make this change, they will find materials enough to support their service. Every feature of the scenery around them, clay-bed, sand-bank, drifted boulder, hill, valley, fossil, will be found a willing witness to the earth's venerable antiquity.

Thus a noble science will speedily be able to assume its rightful power, and to perform its beneficent mission of educating the generations of men and asserting the eternal order which has controlled the course, not only of our humble planet, but also of this universal system.

"It seems," said Laura archly, with her finger on the paragraph, "as if Mrs. Jenkins and Mrs. Kirtland thought the rest of the world were a set of defective specimens especially designed to teach them wisdom,

—just as Miss Lake used to play with misspelled and ill-written sentences before she was to teach us grammar. But I think the author is right, and that we learn more by looking at the well-written sentence

PRIMARY INSTRUCTION.

IV.

DESCRIPTIVE TERMS OR QUALITIES OF OBJECTS.

THE special design of these lessons is to exercise comparison and cultivate the power of description. Children trained by a skillful teacher in our Perceptive Exercises are prepared for this class of lessons at eight or nine years of age. In our ungraded schools they may be given to children commencing the study of grammar. The teacher should pursue similar plans, preparatory to using the text-book, upon the subject of adjectives. We should guard against crowding these terms upon the children. Inexperienced or inconsiderate instructors may fall into the habit of attempting too much in one lesson, or commencing such exercises with pupils who are not prepared for them. In either case the opportunity for a real developing lesson will be lost. The primary teacher should at all times be governed in a great measure by the principle that curiosity is the natural incitement of intellect, and remember that this calls for variety.

ORDER OF PRESENTING THE LESSONS.

1. Idea developed.
2. Examples of objects called, possessing the same quality without applying the term.
3. Term given and written upon the board.
4. Test-questions, for the purpose of ascertaining whether all have gained the idea.
5. Examples given, with an application of the term in question.
6. Summary.

METHOD OF DEVELOPING THE IDEA OF TRANSPARENCY.

1. *Idea developed.*—Present a piece of glass and a common school-slate. Place an object behind each, and when all have observed carefully, request them to think, and be ready to tell, what they can say of the glass that they cannot say of the slate. Give several an opportunity of expressing the idea, and repeat the experiment until

it is clearly expressed that "we can see through the glass, and cannot see through the slate."

2. *Example.*—Request all to think of something else through which they can see very clearly. It will require, in most instances, some careful questioning to draw from the children that water, air, etc., can be seen through. It is not expected, as a general thing, that the teacher will give the examples, but always by proper questioning will endeavor to draw such ideas from the class. A child rarely thinks of giving *air* as an example. By a little ingenuity we may lead him to think of it. For instance, "There is something in this room that we are looking through now. It is between you and me, and yet I can see you very clearly." In this way the class will have the pleasure of making the discovery, besides having some mental exercises in gaining the idea.

3. *Term given.*—Tell them that because we can see through glass, air, water, alcohol, etc., we say they are *transparent*. The word should be written and spelled until committed to memory.

4. *Test-questions.*—What can we say of the glass that we cannot of the slate? (Can see through it clearly.) What else can we see through clearly? What did I tell you we say of glass, air, water, and alcohol, because we can see through them clearly? How do you spell transparent? If the majority of the class are not able to respond to the test-questions, it will be better to review the first part of the lesson.

5. *Examples.*—Request the class to mention things that are transparent. As the examples are given, the sentences should be expressed in full, and written by the teacher upon the board, to be read in a conversational style by the pupils.

6. *Summary.*—This will consist principally of a hasty review and simultaneous repetition of the leading test-questions.

In a subsequent lesson the idea of opacity may be developed in a similar manner. Children are very fond of having these

lessons. They confer a pleasant variety, and give interesting mental effort, at the same time affording some information.

MANNER OF DEVELOPING THE IDEA OF LIQUIDITY.

1. *Development of Idea.*—Pour from a cup some water in a stream. Again, let the water fall in drops. Request all who saw any difference between the water that was poured out first and that last to raise hands. Repeat the experiment until the majority of the class have observed some difference. After many hands have been raised, request answers to the questions. What difference did you see? When all have observed that in the latter case it fell in *drops*, lead them to express what it did to the paper or floor on which it fell. (Wet it.)

2. *Examples.*—Something else that will form itself into drops and wet.

3. *Term given.*—Tell them that because water, milk, cider, vinegar, etc., will form themselves into drops and wet, they are said to be *liquids*. Word written, read, and spelled, until committed to memory.

4. *Test-questions.*—What did the water do, or how did it fall when poured out last? (Dropped.) Give the sentence to be repeated several times. The water formed itself into drops. What did it do to the paper? (Wet it.) Tell me all you observed about the water. Answer: The water formed itself into drops and wet. This should be committed to memory.

5. *Examples of Liquids.*—Sentences written.

6. *Summary.*—It must not be expected that the answers to the questions will be given at once. It is very often necessary to assist the children in the art of expression after the idea has been gained. A lesson of this kind, properly developed, was never given without actual labor on the part of the teacher. We must sometimes labor to interest in order to instruct. It requires patience and perseverance as well as energy and tact to succeed well in this unfolding process. A faithful teacher will, however, be fully repaid, after an exercise of continued patience, by witnessing the growing interest, the quickened perception, the aptness, sharpness, and prog-

ress in the art of expression on the part of the children. The same general rules which have been given before should be followed in working out these lessons. The attention of all should be gained. The younger or more backward ones should be tested first, so that the teacher may ascertain whether the illustrations are sufficiently simple, etc. After an idea has been gained, much repetition is necessary to give practice in the use of language and for the cultivation of the memory. Proper attention should be paid to reading, spelling, to the capital letter and period of each sentence as written upon the board. If it is a class beginning to study grammar, the children may be led to see that describing words are called *adjectives*.

MANNER OF DEVELOPING THE IDEA OF SOLUBILITY.

1. *Development of Idea.*—Present two glasses, both containing water. After gaining the attention of all, place in one some sugar—in the other, some sand. When the idea has been brought out by comparison that the sugar dissolves, lead the class to think of something else in which the sugar would dissolve—tea, milk, cider, etc. What are they all called? (*Liquids*.) What will sugar dissolve in? (*In a liquid*.)

2. *Examples.*—Mention other things that would dissolve in a liquid.

3. *Term given, etc.*

In the summary, the sentences, "We say sugar is soluble because it will dissolve in a liquid," "We say salt is soluble," etc., may be given to be repeated simultaneously until committed to memory.

IDEA OF POROSITY DEVELOPED.

1. *Development.*—Present a piece of sponge and a piece of glass. Allow the class to examine them and say what difference they observe in the surfaces? What do they observe about the sponge that they do not about the glass? When the idea has been expressed that the sponge is full of little holes, tell them that the little holes are called *pores*.

2. *Examples, etc.*

We find upon experiment that fifteen or twenty minutes daily for a fortnight may be spent upon exercises similar to the fore-

going hastily-prepared sketches, without loss of interest. After a change of subject we frequently select some object which will afford an opportunity for a review of some previous lesson, and give other quali-

ties suitable to be brought out. For example: Loaf sugar is soluble, loaf sugar is brittle, loaf sugar is rough; water is transparent, water is a liquid, water is colorless and tasteless.

SCIENCE AND THE SPIRITS.

THE seeming indifference with which pseudo "spiritual phenomena" are regarded by scientific men is sometimes alluded to in terms of reproach, and the charge is not unfrequently made that they decline investigation. The result of "an attempt to apply to the 'phenomena' those methods of inquiry which are found available in dealing with natural truth," is given in the *London Reader*. The article is in substance as here given.

We did not go, says the writer, as entire unbelievers in the facts. On the contrary, we thought it probable that some physical principle, not evident to the spiritualists themselves, might underlie their manifestations. Extraordinary effects are produced by the accumulation of small impulses. Galileo set a heavy pendulum in motion by the well-timed puff of his breath. Ellicot set one clock going by the ticks of another, even when the two clocks were separated by a wall. Preconceived notions can, moreover, vitiate, to an extraordinary degree, the testimony of even veracious persons. Hence our desire to witness those extraordinary phenomena, the existence of which seemed placed beyond doubt by the known veracity of those who had witnessed and described them. The meeting took place at a private residence. Our host, his intelligent wife, and a gentleman whom we shall call Mr. M., were in the house when we arrived. We were informed that the "medium" had not yet made her appearance; that she was sensitive, and might resent suspicion. It was therefore requested that we should examine the tables and chairs before her arrival, in order to assure ourselves that there was no trickery in the furniture. We did so; and then first learned that our hospitable host had arranged that the *séance* should be a dinner-

party. This was an unusual form of investigation; but we accepted it, as one of the accidents of the occasion.

The "medium" arrived—a delicate-looking young lady, who appeared to have suffered much from ill health. We took her to dinner, and sat close beside her. Facts were absent for a considerable time, a series of very wonderful narrative supplying their place. The duty of belief on testimony was frequently insisted on. Mr. M. appeared to be a chosen spiritual agent, and told us many surprising things. He affirmed that, when he took a pen in his hand, an influence ran from his shoulder downwards, and impelled him to write oracular sentences. We listened for a time, offering no observation. "And now," continued Mr. M., "this power has so risen as to reveal to me the thoughts of others. Only this morning, I told a friend what he was thinking of, and what he intended to do during the day." Here, at length, was something tangible—an alleged capacity to divine one's thoughts, which could be at once tested. We responded thus: "If you wish to win an apostle to your cause, and to have your principles proclaimed from the housetop, *state what we are now thinking of.*" Mr. M. reddened, and did not tell us our thought.

Some time previously we had visited Baron Reichenbach in Vienna, and we now asked the young lady whether she could see any of the curious things which he describes—the light emitted by crystals, for example. Here is the conversation which followed, as extracted from our notes, written on the day following the *séance*.

Medium.—Oh, yes; but I see light around all bodies.

Writer.—Even in perfect darkness?

Medium.—Yes; I see luminous atmospheres round all people. The atmosphere which surrounds Mr. D. would fill this room with light.

Writer.—You are aware of the effects ascribed by Baron Reichenbach to magnets?

Medium.—Yes; but a magnet makes me terribly ill.

Writer.—Am I to understand that, if this room were perfectly dark, you could tell whether it contained a magnet without being informed of the fact?

Medium.—I should know of its presence on entering the room.

Writer.—How?

Medium.—I should be rendered instantly ill?

Writer.—How do you feel to-day?

Medium.—Particularly well. I have not been so well for months.

Writer.—Then, may I ask you to state whether there is, at the present moment, a magnet in our possession?

The young lady looked at us, blushed, and stammered, "No; I am not *en rapport* with you."

We sat at her right hand, and a left-hand pocket, within six inches of her person, contained a magnet.

Our host here deprecated discussion, as it "exhausted the medium." The wonderful narratives were resumed; but we had narratives of our own, quite as wonderful. The spirits indeed seemed clumsy vulgar-ians compared with those with which our own researches had made us familiar. We therefore began to match the wonders which they related by other wonders. A lady present discoursed of spiritual atmospheres, which she could see as beautiful colors, when she closed her eyes. We professed ourselves able to see similar colors, and, more than that, to be able to see *the interior of our own eyes*. The medium affirmed that she could see actual waves of light coming from the sun. We retorted that we could tell the exact number of waves emitted in a second, from the red table-cover before us, and also their exact length. The medium spoke of the performances of the spirits on musical instruments. We said that such performance was gross, in comparison with a kind of

music which had been discovered some time previously by a scientific man. Standing at a distance of twenty feet from a jet of gas, he could command the flame to emit a melodious note; it would obey, and continue its song for hours. So loud was the music emitted by the gas-flame, that it might be heard by an assembly of a thousand people. These were acknowledged to be as great marvels as any of those of spiritism. The spirits were then consulted, and we were pronounced to be a *first-class medium*.

During this conversation a low and off-repeated knocking was heard under the table. These were the spirits' knocks. We were informed that one knock, in answer to a question, meant "No;" that two knocks meant "Not yet;" and that three knocks meant "Yes." In answer to the question, whether we were a medium, the response was three brisk and vigorous knocks. We noticed that the knocks issued from a particular locality, and therefore requested the spirits to be good enough to answer from another corner of the table. *They did not do so*; but we were assured that they would do it, and much more, by and by. The knocks continuing, we turned a wine-glass upside down, and placed an ear upon it, as upon a stethoscope. The spirits seemed disconcerted by the act; they lost their playfulness, and did not quite recover it for a considerable time.

Somewhat weary of the proceedings, we once threw ourselves back against our chair and gazed listlessly out of the window. While thus engaged the table was rudely pushed. Attention was drawn to the wine, still oscillating in the glasses, and we were asked whether that was not convincing. We readily granted the fact of motion, and began to feel the delicacy of our position. There were five pairs of arms upon the table, and five pairs of legs under it; but how were we, without offence, to express the conviction which we really entertained? To ward off the difficulty, we again turned a wine-glass upside down, and rested the ear upon it. The rim of the glass was not level, and the hair on touching it caused it to vibrate, and produce a peculiar buzzing sound. A perfectly candid and warm-hearted old gentle

man at the opposite side of the table, whom we shall call G., drew attention to the sound, and expressed his entire belief that it was spiritual. We, however, informed him that it was the moving hair, acting on the glass, that produced the rattle. The explanation was not well received; and Mr. M., in a tone of severe pleasantry, demanded whether it was the hair that had moved the table. The promptness of our negative probably satisfied him that our notion was a very different one.

The superhuman power of the spirits was next dwelt upon. The strength of man, it was stated, was unavailing in opposition to theirs. No human power could prevent the table from moving when they pulled it. During the evening this pulling of the table occurred, or rather was attempted, three times. Twice the table moved when our attention was withdrawn from it; on a third occasion, we tried whether the act could be provoked, by an assumed air of inattention. Grasping the table firmly between our knees, we threw ourselves back in the chair, and waited, with eyes fixed on vacancy, for the pull. It came. For a couple of seconds it was pull spirit, pull muscle; the muscle, however, prevailed, and the table remained at rest. Up to the present moment, this interesting fact is known only to the particular spirit in question, and ourselves.

A species of mental scene-painting, with which our own pursuits had long rendered us familiar, was employed to figure the changes and distribution of spiritual power. The spirits were provided with atmospheres, which combined with and interpenetrated each other, considerable ingenuity being shown in demonstrating the necessity of *time* in effecting the adjustment of the atmospheres. In fact, just as in science, the senses, time, and space constituted the conditions of the phenomena. A rearrangement of our positions was proposed and carried out; soon afterwards our attention was drawn to a scarcely sensible vibration of the upper part of the table. Several persons were leaning on the table at the time, and we asked permission to touch the medium's hand. "Oh, I know I tremble," was her reply. Throwing one leg across the other, we ac-

cidentally nipped a muscle, and produced thereby an involuntary vibration of the free leg. This vibration, we knew, must be communicated to the floor, and thence to the chairs of all present. We therefore intentionally promoted it. Our attention was promptly drawn to the motion; and a gentleman beside us, whose value as a witness we were particularly desirous to test, expressed his belief that it was out of the compass of human power to produce so strange a tremor. "I believe," he added earnestly, "that it is entirely the spirits' work." "So do I," added, with heat, the candid and warm-hearted old gentleman G. "Why, sir," he continued, "I feel them at this moment shaking my chair." We stopped the motion of the leg. "Now, sir," G. exclaimed, "they are gone." We began again, and G. once more ejaculated. We could, however, notice that there were doubters present, who did not quite know what to think of the manifestations. We saw their perplexity; and, as we had sufficient reason to believe that the disclosure of the secret would simply provoke anger, we kept it to ourselves.

Again, a period of conversation intervened, during which the spirits became animated. The evening was confessedly a dull one, but matters appeared to brighten towards its close. The spirits were requested to spell the name by which the writer is known in the spiritual world. Our host commenced repeating the alphabet, and, when he reached the letter "P," a knock was heard. He began again, and the spirits knocked at the letter "O." We were puzzled, but waited for the *dénouement*. The next letter knocked down was "E." We laughed, and remarked that the spirits were going to make a poet of us. Admonished for our levity, we were informed that the frame of mind proper for the occasion ought to have been superinduced by a perusal of the Bible, immediately before the *séance*. The spelling, however, went on, and sure enough we came out a poet. But matters did not end here. Our host continued his repetition of the alphabet, and the next letter of the name proved to be "O." Here was manifestly an unfinished word, and the spirits were apparently in their most communi-

cative mood. The knocks came from under the table, but no person present evinced the slightest desire to look under it. We asked whether we might go underneath; the permission was granted, so we crept under the table. Some of those present tittered; but the candid G. exclaimed, "He has a right to look into the very dregs of it, to convince himself." Having pretty well assured ourselves that no sound could be produced under the table without its origin being revealed, we requested our host to continue his questions. He did so, but in vain. He adopted a tone of tender entreaty; but the "dear spirits" had become dumb dogs, and refused to be entreated. We continued under that table for at least a quarter of an hour, after which, with a feeling of despair, as regards the prospects of humanity, which we had never before experienced, we regained our chair. Once there, the spirits resumed their loquacity, and dubbed us "The Poet of Science."

This, then, is the result of an attempt, made by a scientific man, to apply to spiritual phenomena the only methods of inquiry at the disposal of human beings. It is not encouraging; and for this reason: The present promoters of spiritual phenomena divide themselves into two classes, one of which needs no demonstration, while the other is beyond the reach of proof. The victims like to believe, and they do not like to be undeceived. Science is perfectly powerless in the presence of

this frame of mind. It is, most state perfectly compatible with intellectual subtlety, and a cap devising hypotheses, which only the hardihood engendered by strict conviction, or by callous mendacity, them impregnable. The logical of science is not sufficiently borne It keeps down the weed of superstition not by logic, but by slowly rendering mental soil unfit for its cultivation science appeals to uniform experience spiritualist will retort, "How do you get that a uniform experience will be uniform? You tell me that the earth has risen for five thousand years: then prove that it will rise to-morrow the next twelve hours it may be annihilated by the breath of the Almighty. Taking this ground, a man may tell the story of "Jack and the Beanstalk" the face of all the science of the earth. I urge, in vain, that science has gained the knowledge of the universe and now possess; while spiritualism in the present time, added nothing to knowledge. What is the world of a man, or a woman, under the influence of the vapor of sulphuric ether? much as it is to a weak brain, in the fumes of spiritualism. The soul is beyond the reach of reason in vain that impostors are exposed special Demon cast out. He has but to change his shape, return to his old and find it "empty, swept, and ga

MEDICO-PSYCHOLOGICAL VIEWS OF EDUCATION

TO understand thoroughly how instruction can be imparted with advantage to all kinds of intellects requires the knowledge of medico-psychological principles. Human intelligence is the manifestation of a spiritual principle through organs which have life and matter for attribute. Like any other organ, the properly exercised brain acquires strength, and its faculties become more extensive. Our aim should be, consequently, to give to the brain itself all the material and moral conditions requisite

for a full and complete development. Every society is to enjoy a state of civilization, it will be when two conditions of material and moral development are obtained when all the modifications obtainable from the progress of science and the arts are spared to man those toils that stifle the faculties, and when moral and social circumstances will be favorable to education, and shall have cast out ignorance, misery, and vice.

The great art of the teacher is,

ple, to bring the effect of such advice to bear upon his pupils. Let him attempt to repel or compress natural impulses in their first shooting forth, but support and direct them so as to maintain balance between body and mind. One who possesses ordinary intelligence, enjoys good health, his teacher is likely to be to him what the child would be to himself, a constant help for overcoming difficulties. If a pupil is placed in favorable circumstances, mentally or bodily, time and hygiene must bring their own remedy; and encouragement are the best to bring him to a comparatively advanced state of instruction. We know the case in which the teacher must use severity, and to corporeal punishment the welfare of children; it is to meet with *perverted will* and resisting kindness and reprehension. Superintendent of a State Lunatic Asylum, the writer has had cases of homicidal insanity which were due to undue indulgence at home. In the case of many selfish and vicious children the only way to save them from crime and insanity, is to prepare them for the necessities, antagonisms, commands, and individual absorptions, and to make them so common in life. The object of education is to make men and good citizens; therefore, science, children must acquire social qualities. For that aim, the greatest power is *self-government*. We see human skill and perseverance conquer difficulties in the material order of nature. In one sense it is said that we modify time and space, as the minerals, vegetables and that surround us. How could it be should have been created without ever our faculties? Will you illustrate power over children? Then confidence to the diffident pupil, enshrine him in his attempts, make him believe in his ultimate success. Presumed to have often been the cause of accidents. External causes may act in relative action; for instance, materiality of the body has something to do with the purity of the thoughts, and

elevation of the mind,—the amelioration of the individual leads to that of the family, and even to that of a community. We are inclined to think that man might in this way influence his own destiny and that of his fellow-citizens.

Human intelligence may be developed by two methods—by classical learning and the mathematical studies; good education and instruction require both. Why should we spend so much time to acquire ancient and obsolete languages? Because the writings of Greek and Latin philosophers abound with literary and moral beauties, that give the mind the taste for what is really good and beautiful. Mathematical studies form and discipline the judgment. But are we always to act on demonstrated principles? The study of difficult problems of social economy gives us no light on moral principles. Mere facts studied in the history of nations would lead us to strange errors, if not associated with the principles of justice. Scientific and literary studies are necessary to all stations of life, and at the same time possible to every youth. By a natural development of the mental faculties, literary studies are the best adapted to those of the age from twelve to sixteen, and from that age the mind is disposed and able to grasp with abstract truths of the highest branches of science. According to our views, and in relation to the unfolding of the judgment of pupils, we prefer the analytical methods to the synthetical. To conclude, we say to all concerned in education: Let your instruction, either classical or scientific, be at the same time of a moral character, having especial regard to all human obligations.

[In adverting to hygienic principles in connection with mental development, our contributor broaches a subject which is too little regarded in all educational systems, and which we would gladly see treated with more amplification. The most recent physiological and psychological developments indicate that the mental faculties are not merely sustained by the vital or animal basis, but are the incidents, the inevitable manifestations of the vital functions. The interdependence of the mind and the body has never been fully recognized.—Ed.]

PETROLEUM.

II.

THE presence of Petroleum in any particular spot cannot be definitely ascertained by surface indications. It is true that gas-springs, or oil floating on the surface of creeks, or bituminous shales cropping out, are in a measure presumptive evidence of adjacent petroleum. But that such evidences are not necessary is proved by the fact, that wells have frequently been sunk and proved successful, where not a single surface indication existed. The only means of determining the district in which to sink the well, is to examine the character of the geological formations. If these belong to the oil-bearing-group, a well may be sunk, but it is merely a chance whether or not the oil will be struck, since it is not found spread out in sheets, or equally distributed in horizontal strata, but only in cavities, concerning whose origin we have spoken in the first part of this paper.

Two or three of these cavities are frequently connected with each other, there being a single large one, of which the others are dependencies. In every cavity we find gas, oil and water placed according to their specific gravities. If the well enter at the top of the cavity, the gas rushes out with great force, ejecting whatever water may have collected in the boring, and frequently forcing out, at the same time, the drill to a considerable distance. It is necessary, then, to commence pumping the oil immediately, lest it become much mixed with the water, which flows down from the sides of the boring. If the well should enter further down, and strike the oil, this, if the gas be of sufficient tension, will be thrown out with great force to a distance sometimes of thirty or forty feet, so that frequently large quantities are wasted from lack of preparation to receive it. This flow continues until the gas has reached the mouth of the tube, or has lost its tension; after which it is necessary to resort to the pump to keep up the supply of oil. Should the boring strike still lower down, and enter the water, no oil can be obtained until the water has been entirely

removed. Sometimes this operation is tedious, but is frequently rewarded by great pecuniary success. The well, on the Little Kanawha, required constant draining with a steam-pump weeks, yet yielded very abundantly.

A curious phenomenon, sometimes that of the intermitting well. It often becomes exhausted, but after a period is replenished, and then flows; this alternate exhaustion and replenishing may continue indefinitely. Evans explains this, by supposing cavities are connected with others by slight channels, whose capacity for replenishing is less than the tube for exhaustion. One well of this character expels about a barrel of oil at intervals of half an hour, and then stops. After each stoppage it is only necessary to pump out a little water, when the flow resumes. The number of intervals in different wells varies from four or five to four or five per hour. Sometimes they have two periods depending upon the escape of gas; one of variation and another of cessation. These are of the class termed "flowing." In these the gases possess sufficient tension to expel the oil to the surface without a pump. In most cases, however, the gas is in small amount, or possesses such slight tension as to require the pump to bring it up. Some of these "pumping" wells exhibit the phenomenon of intermittently flowing because some neighboring wells of greater power drain them through communicating channels. From the observations of Prof. Evans it follows, that the gas is the especial agent causing the oil to flow; and there is no reason to believe, as some have supposed, that the flow is raised by the pressure of a column of water, whose fountain is higher than the top of the boring.

Oil and artesian wells are bored in the same manner. In Pennsylvania the oil-producing rock is at a con-

distance below the surface, the operation is more difficult than in other districts. The process in that region is somewhat as follows: The surface-machinery, such as a derrick and a small steam-engine of about six horse-power, being provided, the driller drives a pipe, six inches in diameter, and made of iron one inch thick, through clay and gravel, to the depth of about fifty feet, when the hard rock is reached. The pipe is then cleaned out, and a drill, about two and a half inches in diameter, attached to a temper-screw, is introduced, by which eight or ten feet per day are bored through slate, to the depth of perhaps one hundred feet, when the "first sand-rock" is reached. After boring from twenty-five to fifty feet more, the drill reaches the "second sand-rock," in which wells are frequently found. At a greater depth of fifty or seventy-five feet lies the "third sand-rock," in which the great wells are found. When this formation is reached, the well is tested for oil by pumping. If no oil appear, the well is abandoned, or bored deeper: this matter depending very much upon the obstinacy of the speculator. If oil be reached, the well is immediately enlarged by a "rimmer." During the boring, springs of water are frequently opened, and therefore, as the influx of water would materially add to the expense of procuring the oil, a bag filled with flax-seed is driven down, outside of the oil-tube, below the springs. The seed becoming moistened, swells, and effectually prevents the flow of any water into the cavity.

The cost of sinking a single well is much greater than is generally supposed. To bore a well six hundred feet deep requires, at the lowest estimate, \$6,500. Many companies are organized, whose working capital does not exceed \$10,000. If their first boring should prove unsuccessful, there would be scarcely sufficient left to sink a second; although the expense would be hardly more than one half that required for the first. It is, therefore, unwise for a company to begin operations with less than thirty thousand dollars of cash capital, since it may be necessary to make several borings before meeting with success. Even in the most productive regions, it is but a chance whether oil will be found. One

case now occurs to our mind, in which a well was sunk, and proving barren, was abandoned. It was sold for a mere trifle, to an enterprising German, who, while "rimming" it, opened a cavity which proved to be very rich.

The transportation of the oil from the wells to a market, is now a business of extreme importance and profit. Every effort is made to increase the facilities, and expedients of the most gigantic character are employed. From the Pennsylvania wells to the termini of the Oil Creek, twelve miles, and the Atlantic and Great Western railroads, seven miles, pipes for conveying the oil are to be laid as gas-pipes are laid in our cities. By this means, it is believed, ten thousand barrels of oil per day can be delivered at the depots with less expense than is incurred under the present system of cartage.

Petroleum in its crude state is, as we have seen, made up of various solid and liquid hydro-carbons, so that it is unfit for use. Hence it is necessary to refine it by distillation. This process is too tedious and technical to be explained here. The average cost of refining petroleum is about five cents per gallon, besides loss, which ranges from 10 to 40 per cent, according to the oil. Among the lightest products is the remarkably inflammable substance, benzine, or benzole. This is a solid at 40° F., but boils at 140° F., and is therefore among the earlier products of distillation. It is an excellent substitute for camphene, and is used for cleaning wool and gloves, as well as for dissolving caoutchouc, and other gums.

When benzole is slowly added to fuming nitric acid, and gently heated, there is very considerable action. On dilution a heavy oil separates, which may be distilled unaltered at 415° F., and is known as nitrobenzole. This substance has a sweetish taste, and an odor resembling the oil of bitter almonds. It is used by confectioners and perfumers under the name of *essence of mirbane*, or bitter almonds. A strange peculiarity of this compound is its effect as a poison. About two years ago a gentleman of Philadelphia published an interesting paper on this subject in the *Journal of Pharmacy*, in which he stated that nitrobenzole, when given in proper doses, would

not manifest its poisonous qualities for a week or more; but at the end of this time the patient would be seized by a terrible fever, from which it would be barely possible to recover. The strangest part of the statement is, that a *post-mortem* examination shows no nitro-benzole present, it having been entirely eliminated or converted into aniline, which is itself a constituent of the human body. In this substance, then, we are likely to find the analogue of those mysterious poisons, said to have been administered by professional murderers in the old Roman and Grecian empires. Society, and wives with jealous or dissatisfied husbands, may, however, have the satisfaction of knowing that few persons are likely to be removed by this means, as, even in the hands of an experienced person, its preparation is attended with some danger, and the administration of an excessive dose is apt to bring on unmistakable symptoms immediately.

Another product of distillation is naphtha, which is now used as a substitute for turpentine. Kerosene oil, known throughout the world as an illuminator, is a product ranging from 58° to 49° (Baume's scale). Another product is paraffine, as termed from the slight affinity it possesses for other substances. It is white and waxy, resembling spermaceti, for which, indeed, it is frequently used as a substitute. It occurs in great quantities at Oil Creek, Penn., where it frequently chokes up valuable wells. Neither acids nor alkalies have any effect upon it, so that, in order to reopen the well, it is necessary to inject steam or condensed air, by which means, as paraffine melts at 112° F., it is readily removed. Paraffine is used for lubricating, and, mixed with linseed oil, for painting. The lowest or waste products of the distillation are used for the manufacture of illuminating gas. The St. Nicholas Hotel of New York city is lighted by gas from this source, and it is said that the annual expense is \$10,000 less than if coal-gas were used.

No substance known gives so many useful products as petroleum. From benzole we are enabled to procure aniline, from which many of the most beautiful colors known have been produced. A large es-

tablishment for the manufacture of from the residuum, or waste product of distillation, has been built in connection with the Humboldt Refinery, in the Creek region. The process there employed is not known; though, as the residue is not a very profitable source of aniline, it is believed that coal-tar is used in connection. The delicate and popular colors, Humboldt, Azurina, Mauve, Magenta, Roseine, and Purpurine may all be derived from the petroleum "waste." Investigation of these colors now occupies the attention of many leading scientists, so that new dyes are continually discovered. Dr. Hoffman, of London, has just given an interesting history of colors, and terms their base, *Phenylamine*.

Petroleum is now used to a considerable extent in wool-spinning, and is said to have a beneficial effect on the wool, and on the teeth of the machine. Paraffine is used as a substitute for spermaceti, in the manufacture of candles. These are as bright as lead, give a beautiful light, and perform well in any climate. Paraffine oil is used by curriers, and is preferred by them as it renders the leather tougher and longer than when dressed with fish-oil. Asphaltum, one of the crude products, a valuable constituent of several coatings and varnishes. The crude oil itself is an excellent remedy for many cutaneous eruptions and is now much used in combination with soap. It possesses considerable virtue as a purgative. Not long ago an army surgeon discovered that it was as useful in inflammation as water is in inflammation. Late, petroleum has been canonized by the Roman Catholic Church, and may now be used instead of olive-oil, in case the latter cannot be procured. Various attempts have been made to use petroleum instead of coal, in ocean traveling; but they all have proved unsuccessful, as petroleum is too expensive, and besides, it occupies very nearly as much room as coal. It is confidently expected, however, that means will yet be found by which it may be used so economically as entirely to supersede coal in ocean-traveling.

The oil produced in Pennsylvania this year was sold at the wells for \$56,00



A. Lincoln

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while the iron and coal produced only \$51,000,000. The amount sent abroad is continually increasing. The exports of 1864 amounted to 27,104,845 gallons, against 8,065,902 gallons in 1862, and 23,413,466 in 1863. The increase in the home-trade has been most remarkable: so great, indeed, that, though a few years ago the oil could be procured for twenty-five cents per barrel, it now commands about twenty dollars in New York. It has entirely supplanted all other means of illumination throughout the country. Many leading men, well informed concerning the oil regions, believe that the yield during this year will be far inferior to that of last year, unless new territory is opened up. There is, however, little danger of the supply being cut off, since, as we have seen, the oil-producing region is of vast extent.

During a year or two after the introduction of petroleum oils to the public as illuminating agents, explosions frequently occurred, resulting from imperfect separation of the naphtha and benzine. To protect against such explosions all oil must now pass through the hands of inspectors before it can even find a purchaser. No accidents have occurred from the use of tested oils for illuminating purposes.

The effect of the oil discovery has been very remarkable. In the oil-regions cities have sprung up with unexampled rapidity, though the buildings are not of the most substantial character. Men, who, but a very few years ago, were in the very depths of poverty, are now possessed of great wealth; farms, which lately could not be sold for the taxes, now command a thou-

sand dollars per acre. Many curious and ludicrous incidents might be given respecting the petroleum millionaires, but our space forbids it. The oil is likely to prove a most important source of revenue to the government. One firm, engaged in refining at Oil Creek, paid \$1,200,000 of tax last year.

It would be improper to close this article without giving a word of warning to those who may purpose entering into oil speculations. The business cannot fail if properly begun: but no one should take stock in any company until he has first consulted with some well-informed friend, who can give him impartial advice. As was the case during the California excitement of 1848-9, an immense number of companies have sprung up, with flaring prospectus, and promising immense profits. Many of these are *bona fide*; but, from the nature of the case, many others are not. Many of the latter have valuable lands, and if worked on an honest basis would prove immensely profitable; but, as frequently managed, they prove profitable only until all the stock has been taken. After this they most unaccountably become worthless, and remain so for some time, until the stock has fallen very far below par, when the small shareholders, fearing they may lose everything, throw their stock into the market, where it is bought up by the few capitalists, who own the greater part of the shares. Then the concern becomes profitable as suddenly as it before became unprofitable. In this way the wealthy few gain everything, while the many poor are hopelessly wrecked.

THE EGG A MINIATURE UNIVERSE.

[The following remarkable passage occurs in Prof. Agassiz's "Methods of Study in Natural History."]

One can hardly conceive the beauty of the egg as seen through the microscope at this period of its growth, when the whole yolk is divided, with the dark granules on one side; while the other side, where the transparent halo of the vesicle is seen, is

brilliant with light. With the growth of the egg these granules enlarge, become more distinct, and, under the microscope, some of them appear to be hollow. They are not round in form, but rather irregular, and, under the effect of light, they are exceedingly brilliant. Presently, instead of being scattered equally over the space they occupy, they form clusters,—constellations,

as it were,—and between these clusters are clear spaces, produced by the separation of the albumen from the oil. At this period of its growth there is a wonderful resemblance between the appearance of the egg, as seen under the microscope, and the firmament with the celestial bodies. The little clusters, or constellations are equally divided. Here and there they are two and two, like double stars, or sometimes in threes, or fives, or in sevens, recalling the Pleiades; and the clear albuminous tracts

between are like the empty spaces separating the stars. This is simply true, that such is the actual appearance of the yolk at this time; and the idea cannot but suggest itself to the mind, that the thoughts which have been embodied in the universe, are recalled here within the little egg, presenting a miniature diagram of the firmament. This is one of the first changes of the yolk, ending by forming regular clusters, with a sort of network of albumen between, and then this phase of the growth is complete.

THE ICE-FLOWER.

[When the rays from an electric lamp are made to pass through ice—"the ice appears to resolve itself into stars, each one possessing six rays, each one resembling a beautiful flower of six petals."—*Heat considered as a Mode of Motion, by John Tyndall, F.R.S.*]

Within the ice,
In strange device,
A sleeping beauty, I
Thy coming wait,
At happy date,
To bring my destiny.

When through my frame
The electric flame
Its radiant pulses sends,
I rise from death;
Thy fervent breath
My glacier fetters rends.

To nature's lock
Which guards the block
Of ice, thy key applied,
My soul sets free,
Which turns to thee
In passion's melting tide.

I pant for you
At thirty-two
By *Fahrenheit* displayed;
Or, should prevail
Another scale,
At zero, *Centigrade*.

In pretty strife,
To start to life
My waking atoms stir;

Their motions fine
To thee incline,
My heart's thermometer.

Folded in frost
In ice-depths lost,
I droop in cheerless night;
Under thy glow
My petals blow,
Ecstatic with delight.

No heavenly star
That shines afar
With my six rays can vie;
The hexagon
Which you have won
Transcends geometry.

Imprisoned here,
With frozen tear
I weep my frigid fate:
Dissolved by you,
In raptures new
May I ne'er regelate.

Then come, my love,
Your powers prove,
Let all your radiance shine;
For evermore
On alp and shore,
I'll be your Valentine.

London Reader, to Prof. TYNDALL, for Feb. 14th

AMERICAN EDUCATIONAL MONTHLY.

APRIL, 1865.

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ENTERED according to Act of Congress,—significant words, these. The book in which they are seen may be crowded with small type, a little paper-covered "cheap edition, or an "octavo, cloth, gilt," but they are conspicuous in an honorable place,—an entire page is devoted to them. They are a talisman causing covetous publishers to drop the volume more summarily than even the "gentle reader" and "discriminating public" dispose of it. The simple statement of a frequently recurring fact, these words have the effect of a decree, compelling many a hard-working compiler to invert chapters and transpose sentences, and to put black dominos on the beautiful thoughts, shackles on the strong ones, that he dare not appropriate in their freshness and freedom.

Toiling quillwright, you are doing a work of supererogation! You want that chapter, for your own book? Take it. "Copyrighted!" Ah, there is where the mistake is made. The prescribed entering of a titlepage "in the clerk's office" does not satisfy the statute. Various points are to be regarded.

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resembling the conveyance of real estate. The assignment must be duly witnessed and recorded. Although an author may receive liberal compensation from the publisher for his manuscript, he does not thereby waive or impair his peculiar privilege.

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Further measures are necessary, to secure valid title, such as the depositing of copies of the published work, within a specified time, at certain offices and departments,—making, together, a system of procedure not generally understood, and warranting the affirmation, based not entirely on inference, that a large proportion of the nominal copyrights are invalid and worthless.

Of course, no reputable publisher or honorable man will make unworthy application of the peculiarities brought to notice. They are presented for the consideration alike of author and publisher, that neither one may rely upon erroneous claims and insecure possessions.

In a collateral matter some of our con

tributors are immediately concerned. They sometimes find their published articles in a guise not at all favorable to recognition. Various reasons concur making modification of manuscripts sometimes indispensable. Sometimes a writer gives us too much—uses more words than his ideas call for; or, on an interesting subject he does not say enough. Often we have some of his ideas, or perhaps even some of his expressions, in an article where they can not so well be dispensed with. Unimportant changes are frequently made for mere typographical expediency.

We advert to this for the purpose of assuring our contributors that such alterations will not always imply defects of manuscripts, and that whenever modification or emendation is required, we wish not to be considered uncourteous or unmindful of the rights of authors.

BRAINS *versus* TEXT-BOOKS.

AN artist, admiring the work of a successful professional brother, asked: "With what do you mix your colors to produce such fine effects? "With brains, sir," was the answer. When we hear teachers anxiously asking each other what books they use to advance their pupils in knowledge, we are reminded of this anecdote. If the teacher is true to himself and to his calling, it matters little what text-books may be in the hands of his classes. The successful teacher must prepare himself for every recitation. He must never appear before his class without being "master of the situation." Should circumstances occasionally rob him of the time necessary for imbuing himself with the essence of the subject, he might better defer the recitation.

The teacher will seldom find a perfect text-book. And he should always be ready to point out the errors in each day's lesson. He should be able to cite different authorities when the text-books disagree upon certain questions. Too many of our school-books are imperfect in many par-

ticulars. But, if the teacher use "Brains" properly, he can teach as thorough lessons, and make more enduring impressions upon the mind of his pupils, than he could were all the text-books invariably perfect while he himself was at all deficient. No teacher has a moral right to adopt, and to allow his classes to adopt, unquestioned, the assertions and opinions of school-book makers.

PUBLIC EXERCISES IN SCHOOLS.

AS commonly conducted, we deprecate "school exhibitions" and "school examinations." And yet we are disposed to advocate judicious public exercises, which will call in such parents and friends of the pupils as have not enough enthusiasm or interest to visit the school upon ordinary occasions. In making preparation for these special occasions there cannot be too much care to avoid the abuses of the so-called "exhibitions." Our advice to the teacher is: avoid all desire to "show off" favorite pupils; do not try to make a "sensation." Strive against a "dressed-up," "holiday" display of the persons and attainments of your pupils. Do not go out of your regular course of instruction. Let your visitors see how well your pupils can do what belongs to your daily school duties. Be always so well prepared that you could give creditable public exercises any day, even if unexpectedly required to do so. Avoid waste of time in preparing exercises which will not yield a substantial profit to the minds of your pupils. We know certain "seminaries," as well as public schools, in which the regular exercises of the classes are entirely broken up for weeks before the end of the term, by preparations for "a grand display." Nothing can be more dishonest on the part of the teachers, and damaging to the best interests of the pupils.

Let it be understood that there will be monthly, or semi-monthly public exercises. Let them consist of regular reviews of the classes—not too many of the classes on one day, or they will become tedious. Then

let there be read a school-paper, made up of the better "compositions" of the pupils, well spiced with pleasant, well-told incidents of the school and neighborhood. Two or three of the best readers should read this "School-Times," or "Bulletin." Rotation should be observed in the selection of readers. This will prove an incitement to improvement in Reading, as well as in Composition.

Then present one or two pleasant, familiar dialogues, and several short declamations. The dialogues should be easy and natural, and should have a pointed moral. The declamations should be timely, and adapted to the ages of the boys who deliver them. Conclude the exercises with one or two school-songs. Such exercises cannot fail to impel pupils to renewed efforts, and to awaken a wonderful interest among the patrons and friends of the school.

To aid in providing material for such exercises we shall, within a few months, begin the publication of appropriate declamations, and school dialogues. For that

purpose, we wish contributions of original dialogues of sterling interest and decided adaptation; and we are willing to pay for them. Surely, there are in our schools enough of suggestive incidents on which to base such dialogues. Who will aid us?

OUR NOTES AND QUERIES.

INQUIRIES as to various points more or less directly connected with educational matters, have become so numerous as to require a special department in the MONTHLY for the insertion of those which may be of general interest, and for such brief notes as our contributors may furnish relating to schools and literary and scientific matters, or other subjects in any way pertaining to educational interests. In making inquiries, and in replying to those of others, our correspondents should endeavor to be as concise as possible. Initials will suffice for signatures, but the name and address of the writer must always be given.

EDITORIAL CORRESPONDENCE.

LONDON, March 2, 1865.

4 Democratic School.—Its Object.—Lectures.—College Building.—Library.—Coffee-Room.—Tuition-Fees.—Preparatory Department.—General Character of the Students.—Lectures.—Maurice.—Louis Blanc.

THE WORKINGMEN'S COLLEGE.

THE nature of my employments in London has kept me busy at the Library of the British Museum, instead of allowing me that leisure which I enjoyed at Edinburgh to visit schools: a part of the results of which has been given in preceding letters. Among the educational institutions which I could visit in the evenings, when the great library is closed, none have interested me more than the Workingmen's College, under the direct supervision, and, as we say in America, presidency, of the distinguished Rev. F. D. Maurice, one of the foremost leaders of English thought, and the man to whom Stanley, Kingsley, and those of that ilk look for their intellectual guidance and inspiration. And I will devote this letter to it, not, primarily, because it commands the service of such men as Mr. Maurice,

Mr. Ruskin, and Mr. Hughes, but because it fills a space still open in America, so far as my knowledge extends, but which is subject in New York and Boston to just the same conditions as those which obtain here in London.

OBJECT OF THE INSTITUTION.

The Workingmen's college is not an adult-school: it is a college. It is a *workingmen's* college; but that does not imply that it is devoted to bricklayers and blacksmiths: it does not exclude these, but it employs the word "workingmen" in a wide sense. All who are not strictly professional men are welcome to it: nor would professional men, wishing to bring up any special branch, be excluded: it is not exclusive—it is inclusive—it is thoroughly democratic—it is the very expression of the democracy of Mr. Maurice, Mr. Ruskin, Kingsley, and Mr. Hughes. Men of all ages sit together at the lectures: the question of age is not asked, except to ascertain whether the candidate is over sixteen. There is no preliminary examination,

though there is a preliminary department to the college, where men who wish to attend to the neglected branches of a common English education can remedy the deficiency. But the college proper takes all men who come to attend its lectures, enrolls them on its lists without hesitation, and gives them a cordial welcome.

CHARACTER OF INSTRUCTION.

The lectures are all given in the evening, some of them at eight, and some at nine o'clock, and continue some an hour, some two hours. There are four terms in the year, and each term occupies a little more than two months. The course of lectures embraces the critical study of the Scriptures, Drawing, Bookkeeping, Greek, French, English Literature, Physical Geography, Geology, Structural Botany, Algebra, Geometry, Logic, History, and Military Tactics. The Biblical and Historical departments are in the able hands of Mr. Maurice; that of Drawing is under the general direction of Mr. Ruskin. The other teachers are not men well known, so far away as America, but they have a fine local reputation, and are among the most prominent graduates of the two great Universities.

THE COLLEGE BUILDING.

The college is on Great Ormond street, a short walk from the thronged thoroughfare of Holborn, and in one of the accessible parts of London. The premises were, not a hundred years ago, the mansion of Lord-Chancellor Thurlow, yet it is doubtful whether in the days of its palatial dignity, it was devoted to a nobler use than now, when the fashion of London has gone westward, and the Lord-Chancellors no longer live as in the plain days of the Georges, in a good, solid brick house, twenty-five feet broad at the front. The two lower rooms are devoted to the Library and the Coffee-room: in one of which, from seven in the evening till ten, you may see a number of thoughtful, earnest men, some young, some middle-aged, and a few gray, poring over the admirably selected books accumulated there; in the other you may, in the English fashion, enjoy a cup of tea or coffee, chuckle over *Punch* or digest the *Athenaeum* and *Times* at your leisure. On the second and third stories are the lecture-rooms, some of them larger, some smaller; Lord Thurlow's drawing-rooms being now the resort of the great classes in French, History and Biblical study, while the chambers and drawing-rooms of the burly, hot-headed, and wine-bibbing Chancellor are now the gathering rooms of the classes

in Drawing, Geology and Geometrical German. The college is admirably built, and were a special building to be erected for it, it could hardly be more conveniently planned.

TUITION FEES.

Of the prices of tuition one word to be said. True to the general character of the Workingmen's College, these have been set so low, that instruction is open to almost all who have ambition enough to gain its benefits. A small fee of one shilling and six pence is demanded on entering the institution, and a special test of one shilling is also charged. The rent and the general expenses of the building. For each course of the lectures attended, two shillings per week are demanded; for the two-hour lectures, one shilling. This is but two and a half pence an hour for able instruction. How favorably this compares with round sums of Oxford, Cambridge, even with the prices at Kings College University College! Shillings, at the Workingmen's College, take the place of guineas at those aristocratic institutions.

THE STUDENTS.

Of the preliminary department not need be said. It is equally open to all, and equally beneficial. I have come in contact with any of its students, but I doubt whether they differ much from those in the college proper, except in respect of acquisition. But the latter gentlemen I have found thoroughly well and well informed. They vary widely in their callings: some are clerks, some are engraving operators, some bookkeepers, some are artisans. But the tone of feeling is high among them all—not false, not dishonest, not supercilious, but honorable and the learning which they have. There is nothing in them which gives marks of men who are trying to make a manhood for grievous neglect in boyhood; there is nothing of the grown aboriginal among them. The scholarly men, anxious to "go on in perfection," who find that the only method of this Workingmen's College is the best of appliances to help them.

The excellent results of this institution, aided, doubtless, by the prestige of the Principal and the distinguished college teachers, has led to the establishment of kindred institutions in other large cities of Great Britain, and in them all the same, I believe, a great and noble work is being done.

THE INSTRUCTORS.

I have not yet seen Mr. Ruskin or Mr. Hughes, author of "Tom Brown at R

and "Tom Brown at Oxford," but Mr. Maurice and M. Louis Blanc I have seen. Mr. Maurice, author, pastor of St. Peter's Church, and Principal of the College, is a man of about sixty, and is one of the noblest-looking men I have ever seen. He wears a thoughtful, composed face; and his eye, deep and liquid, is full of expression. I heard him read the opening lecture of the course, and hardly knew which to admire the most, the admirable delivery, the beautiful style, or the rich thought. The theme was the plain one, "The Studies of the College," but it was discussed in so broad, comprehensive, and kindly a spirit, that all were charmed. One Sunday evening I had the pleasure of hearing him in one of his Biblical prelections, which, to me, was not so satisfactory; the subject was the Conversion of St. Paul. It was what we should call evangelical in America, but rather cold and rigid. He seems to try to get so far away from the use of any theological expressions, different from the current language of literature, that he falls on the other side: you fail to catch the distinctive meaning of the great truths he is trying to present, and crave involuntarily a more exact and scientific expression, even if it be at the cost of a rather dry technology.

M. Louis Blanc, the great French republican exile, who not long since delivered to the College a lecture on Molière, is a short, vigorous, earnest, fiery man, full of thought, and vital with genius. He has the philosophical cast of mind, with an intensity of expression which is not essentially philosophic. He resides quietly here in London, and contributes much to the radical French press. He is not officially connected with the Workingmen's College, but is in close affiliation with that circle of choice spirits with whom the charge of this excellent institution is not a Utopian dream, but a present and beneficent reality.

W. L. G.

ANDERSON, TEN., Feb. 18, 1865.

Educational Matters in the South.—Former Character of Schools.—Need of Encouragement.—Opening for Teachers.—Laborers Wanted.—Obstacles.

THE society of the South is so broken up that there is not much attention paid to schools. Something should be done to ameliorate our condition, and it is for you of the North to supply us in that particular. Immediately in this neighborhood there is a school, but it is of poor character. And yet it seems to suit the people.

There always has been a great want of good schools in Tennessee and in the South generally, and the proper means and influ-

ence were never brought to bear. The "School Fund" in this State, never judiciously expended, was often squandered, and the class of teachers and school-ma'ms emigrating from the North were generally of the lowest type. True, whenever one was regularly *salaried* and sent on, he or she proved good. I learn, Mr. Editor, that the conductors and publishers of the MONTHLY are at the head of a noble institution, and can help build up this great moral wreck of society and aid in bringing order out of this chaos. Doubtless you have a surplus of first-class teachers, and can influence them to volunteer. Here is the field. The people will take hold under your endorsement. They have little money, because there was not one quarter crop made last year, but they will pay for learning. Say to teachers, there is Huntsville, Ala., Fayetteville. Ten., Shelbyville, Ten., Winchester, Ten., Decatur, Ala., Chattanooga, Ten., and many other places which need them. And if they will throw aside all prejudices against the South they should go south to these points. The "negro question" is settled as far as we are concerned; and now let us have some of the glorious beauties and enterprises of your people propagated here. We have to come together, and let us get at each other right this time. Encourage, also, laborers to come; for, really, we need them as much as we do teachers, since we are deprived of negro labor. Those of us who think we can survive the shock, are glad to get rid of the responsibility. The poor slaves are in a sad fix, following up the army, and scattering everywhere and not doing much good anywhere. They should be sent to the rear or colonized, immediately, save those who are in arms for the United States. The greatest difficulty with us is to make the connection between negro and white labor in time; and we are compelled to call upon the noble spirits of the North to think of us in this regard. If we have been guilty of a stupendous folly, do not seek to crush us; but throw the mantle of charity over our misdeeds, and take the cup away from us, for we have drunk its bitter dregs. I have written this letter hastily, without application of mind, though I know there is nothing wrong said. You of the North have my warmest regards, especially since I have conversed with thousands of its soldiery passing through this my native valley.

M. J. G.

[The time is coming when there will be a good school in every neighborhood of the South. The globe, the blackboard and chalk, and the sound of the schoolmaster's voice, will be familiar everywhere. West Virginia has already begun the work.—Ed.]

SCIENCE AND THE ARTS.

—At a late meeting of the Chemical Society (London), Prof. Wauklyn, in a paper on the "Action of Sulph-hydrate of Potassium upon Acetic Ether," pointed out the two reactions which were possible in this case, and showed the bearing of the resultant change upon the theoretical constitution of the ether. If the old view was correct, the radical of the acetate of ethyl should unite with sulphur to form mercaptan; but another result was possible, viz.: that the sulphur should combine with the acid, and then thiacetate of potash would be formed. His experiments were not yet quite decisive; but he would confidently state that no mercaptan was generated, which was necessary if acetic ether was the acetate of ethyl.

—At the Royal Academy of Sciences (Berlin), M. Parthey recently read a memoir on "The Upper Course of the Nile according to Ptolemy," in which he compares the description of the sources and course of the Nile, as laid down by the ancient geographer, with the results of the recent researches of Speke and Grant. From Ptolemy's statements, and from those of the unknown author of a Greek fragment, supposed to be of the seventh or eighth century, first published by Hudson, in 1717, the supposed Mountains of the Moon, containing the sources of the Nile, lie in 12° south lat.; and, from them several streams run down to two lakes, under the 6th and 7th par. of lat. south, and separated by about 8° of long. A third lake is situated about 4° further to the east, and immediately under the equator. The latter appears to be identical with the lake called Victoria Nyanza, by Speke.

—An apothecary, at Nantes, has just discovered, by the merest accident, that ammonia will put out fires. He happened to have about seventy litres of benzine in his cellar, and his boy going down carelessly with a light, had set fire to it. Assistance was speedily at hand, and pail after pail of water was being poured into the cellar without producing any effect, when the apothecary himself took up a pail which was standing neglected in a corner, and emptied the contents into the cellar. To his astonishment the flames were quenched as if by magic, and upon examination he found that the pail, which belonged to his laboratory, had contained a quantity of liquid ammonia. The result is easy to explain on scientific principles; for ammonia, which consists of eighty-two parts of nitrogen and eighteen of hydrogen,

is easily decomposed by heat; an nitrogen thus set free in the midst of conflagration, must infallibly put out flames. A large supply of liquid ammonia properly administered would be the perfect fire-extinguisher ever imagined.

—A remarkable petrification of an entire tree, was lately discovered in a Baltimore mine, on the Monongahela while blasting for coal. The piece of trunk taken out weighs nearly four sand pounds, and still there remain the root of the tree imbedded in the stone. There are also to be found in the mine petrifications of the cactus and plants peculiar to tropical climates.

—The French papers tell of the success of a surgical operation, heretofore considered impossible. A young girl, with her head too quickly, dislocated so the upper cervical vertebræ. A part of the lower limbs and the trunk over the diaphragm alone retained its sensibility. Apparently, the patient had but a few hours to live. M. Maisonneuve resolved to attempt to bring the vertebræ into position. With the assistance of a fellow-surgeon he seized the patient by the top of the head and the skin, and gave a gentle rotation to the vertebræ, which resulted in bringing them into their former position. The paralysis ceased almost immediately, and a week after the patient was able to walk as though nothing had happened to her.

—Dr. Jackson, of Boston, has discovered an immense deposit of emery in Massachusetts, which proves to be of as good quality as the Naxos emery. The Connecticut emery (as he terms that discovered by him) contains 60.4 per cent. of alumina, and 39.6 per cent. of protoxyd of iron, thus differing very slightly in composition from the Naxos, which contains 62.3 per cent. of alumina, and 37.7 per cent. of protoxyd of iron. Dr. Jackson is inclined to regard the Connecticut emery as a distinct species and not merely granular form of corundum or sapphire. In view of the immense increase in the manufacture of steel in our country, the discovery is likely to prove of incalculable value.

—One element of the solution of the question of spontaneous generation is to reside in the sunlight, which produces some effects that are not known to result from artificial light or heat, as has already been made known by Messrs. Pouchet and Oh. Morren. Some new facts in this department have been observed by Prof. M.

gazza at the University of Pavia. Two female frogs were quickly killed by the destruction of the spinal marrow, and placed in two glass vases, each of which contained 115 cubic centimetres of well-water perfectly transparent, and free from foreign bodies. One of these vases was left in diffused light, the other was placed in a box, which did not permit a single ray of light to reach it. The experiment was continued seventeen months. At every time the two vases were compared, they remained exposed to the air for an hour or more, and the air was renewed at every observation. Germs could therefore very easily fall in, yet the results were very dif-

ferent in the two cases. The statement of all the results is too long to be given, but an observation made after seven months putrefaction at a temperature of 10° Cent., gave the following: *In the light*; the liquid had a slight odor of boiled meat. On the surface many lively Kolpodes, a great quantity of Vibrios, some Alysea, some Infusoria, which strikingly resemble the Zoosperms of Tritons. At the bottom, some dead Kolpedes and some in the act of multiplying by division into two or four individuals. Also many Vibrios, and some Monads. *In the dark*; the liquid had a strong odor of mushrooms. No organisms; the whole mass liquid.

EDUCATIONAL INTELLIGENCE.

LOUISIANA.

The last "Annual Report to the General Assembly," by John Mac Nair, Esq., State Superintendent of Public Education, is a carefully prepared document of forty duodecimo pages. It begins with an interesting account of education in Louisiana in the early times. It lucidly develops the views of Governor Claiborne in 1804, Governor Robertson in 1823, and Governor Roman in 1831. The early plans did not accomplish good results, because of the manifest lack of democratic principles in the management of the affairs of the public school system.

Mr. Mac Nair, upon taking his office, found that he was entirely destitute of records, as his predecessor had decamped with all the papers of the office. Seeking to obtain the fullest and most accurate information touching the present condition of the public schools in the State, he addressed a catechetical circular to gentlemen residing in the several parishes of Louisiana, and the answers to the questions he propounded have brought to light the following facts:

1. The State of Louisiana is divided into forty-nine parishes, which in turn are subdivided into eleven hundred school districts. The total number of educable children in the State is one hundred and five thousand, forty thousand of whom reside in the city of New Orleans, and of the whole number only about one half attend school.

2. In most of the rural parishes the schoolhouses are "dingy, rickety, half-roofless sheds or shanties, such as a planter

of ordinary capacity for managing his affairs would not allow his negroes to inhabit."

3. In each school district three persons are annually elected to fill the honorable and responsible office of school director, whose duty it is to examine and employ teachers. Most of the individuals thus chosen are so illiterate that in signing a teacher's certificate, or other public document, they make their X instead of signing their name.

4. A majority of the teachers employed are males, many of whom are of immoral habits, and not a few confirmed drunkards. In the report of 1861 it is stated: "The qualifications of teachers, with a very few exceptions, are very indifferent, both morally and intellectually."

In order to depreciate the system of common schools, and prevent the general diffusion of intelligence among the poor whites of the State, the wealthy classes favor the election of the above described directors, and the employment of such teachers.

In his able report Mr. Mac Nair has made some valuable suggestions tending to improvements in the system, and we may reasonably look forward to a better state of things under his administration of the educational affairs of this State.

MINNESOTA.

The Legislature of Minnesota passed an act at its recent session making a grant of 75,000 acres of land to each of the three normal schools "now and hereafter to be established" in that State. There was but one opposing vote in the entire body

This munificent grant, it is estimated by competent judges, will yield a fund of half a million of dollars for each of the institutions referred to, the income of which will be sacredly devoted to the work of training teachers. At the legal rate of interest, this fund will afford an annual income of \$35,000, about three times the amount appropriated to any similar institution in this country. The normal school at Winona is now in a very prosperous condition. The model and practice schools are already in operation, and every department of the school is full. A large and commodious edifice will soon be erected. Minnesota is rapidly marching forward to the front rank in educational matters.

INDIANA.

In the "School Law," just amended by the Legislature of Indiana, we notice the following points:

It increases the school tax for tuition on the taxable property of the State from ten cents to sixteen cents on each \$100 of the valuation of such property.

It limits the number of school trustees for each incorporated town and city to three, and more clearly defines their powers, duties, and liabilities.

It provides that if any teacher shall commence a school without having a license to teach, which is in full force at the commencement of the school, such teacher thereby forfeits all right to compensation out of the tuition revenue for the time so taught without license.

It requires school examiners to hold, or cause to be held in their respective counties, a teachers' institute for the term of five days in each year; and if there is an average daily attendance of twenty-five teachers or more, he may draw from the county treasury \$35 for the payment of

expenses; and if there is an average attendance of fifty or more, he may draw from the county treasury \$50 for the purpose. The compensation of examiners is increased to \$3 per day, to be paid by the board of county commissioners, payable from the county treasury, a board is required to limit the number of days' services for which the examiners of their respective counties may be compensated.

It amends the law relative to the duties of the superintendent of public instruction and relieves him of one half of the cost and expense of visiting the several counties, which has heretofore been required.

It provides a permanent annual appropriation of one tenth of a mill on each dollar of taxable property, for the support of the township libraries, which amount annually to about \$55,000.

It reorganizes the State board of education, and makes it to consist of the governor, the State superintendent of instruction, the president of the State university, the president of the normal school (if such an office is created), and a superintendent of the common schools. The three largest cities of the State shall elect a superintendent of public instruction, who shall be made president of the board.

Said board is made also a State board of examiners, for the examination of applicants for license to teach, with authority to license such as are found to possess the necessary qualifications. The licenses granted by said board are good throughout the State, and for the lifetime of the holder, to whom they are issued, unless revoked by the board.

A bill for the establishment of a normal school passed the House of Representatives, but was not reached the Senate.

MISCELLANY.

—"Boys, I must have closer attention to your books. The first time one of you sees another idle, I want you to inform me, and I will attend to the case."

"Ah," thought I to myself, "there is Joe Simpson that I don't like. I'll watch him, and if I see him look off his book I'll tell." It was not long before I saw Joe look off his book, and immediately I informed the master.

"Indeed," said he; "how did you know he was idle?"

"I saw him," said I.

"You did! and were your eyes on his book when you saw him?"

I was caught, and never watched boys again.

If we are sufficiently watchful of our own conduct, we shall have no time to find fault with the conduct of others.

—The only practical joke in which I participated was that of Harris Bareham, better known as Tom Ingoldsby, ever personally engaged in a practical joke enacted when he was a boy at (

bury. In company with a schoolfellow, he entered a Quaker meeting-house, when, looking around at the grave assembly, the latter held up a penny tart, and said solemnly, "whoever speaks first shall have this pie." "Go thy way, boy," said a drab-colored gentleman, rising, "go thy way." "The pie's yours, sir," said Bareham, placing it before the astonished speaker, and hastily effecting his escape.

—A most important discovery has just been made in South America. The head waters of the Amazon commence in Peru, in the Andes, and a Peruvian steamer being sent to explore them, found the river navigable to a point three hundred miles from Lima, on the Pacific coast. The steamer navigated the Amazon two thousand miles, and its tributaries, six hundred miles. This is, in fact, a route to the Pacific.

—The Emperor of Russia has transmitted to the library of Yale, through Baron Stoeckl, at Washington, a splendid copy of the celebrated *Codex Sinaiticus*, which was found at the convent of St. Catherine, on Mount Sinai, in 1859, and is considered by Dr. Tischendorf, the discoverer, the best authority as the correct text of the New Testament. American scholars will not undervalue this noble gift of the Emperor, through whose liberality the work was engraved for distribution.

—The brother of Beethoven signed his name to distinguish himself from his landless brother, "— von Beethoven, landowner." The immortal composer retorted by signing his, "Ludwig von Beethoven, brain owner."

—The English residents at Rome lately got up some private theatrical performances, and were obliged to apply for the permission of his holiness to act in Lent. They made petition, therefore, to Monsignor Talbot, who, being a convert from the English Church, of which he was once a beneficed clergyman, is an ultra in everything; he rejected their prayer with indignation. The disappointed actors then applied to some one else, who went directly to his holiness himself, who, wonderful to relate, gave full consent, but insisted on having his share of the fun, by ordering Monsignor Talbot to come and translate the pieces to him into choice Italian. One of those was "Box and Cox."

—The custom-house officers of San Francisco have discovered a very ingenious Chinese trick, which led to the seizure of a lot of smuggled opium. Among a cargo were 400 tubs invoiced as eggs, value stated at one dollar each; the eggs

were coated with a peculiar kind of varnish to preserve them. One of the officers, in examining the eggs, scraped off a little varnish, and disclosed a metallic case, egg-shaped, filled with opium. Each metallic egg is worth \$300. There was a thousand of them.

—The arid waste of the Desert of Sahara, under the hands of enterprising Frenchmen, is to be clad with verdure, and water is to spring up in abundance to the surface wheresoever required. Five places are named where deep wells have been sunk on the artesian principle, and the result has been a flood of water to the surface, continuous and vast. Besides this, there is something for the epicure, who, on his travels, has tasted only dried meat, dates, and dried fish, for fish have come to the surface with the stream, which flows from some mysterious source beneath the crust of the earth.

—*Shurtleff College*, Baptist, at Alton, Ill., founded more than twenty years ago by the late Dr. Shurtleff of Boston, is now in a flourishing condition. Its friends at the West are raising a further fund of \$100,000 for its further endowment. Rev. Hubbell Loomis, now over ninety years old, father of Prof. E. Loomis of Yale, has just given his valuable library to this western college.

—The Baptists of the Northern States have under their control nine colleges, for which subscriptions are now in progress to raise endowments amounting to upwards of \$400,000; and three theological seminaries, for which they are raising at least \$10,000, all of which they hope to complete before the end of the year 1865.

—The colored troops in the Army of the Potomac are exhibiting a wonderful eagerness and readiness to learn. The Christian Commission are endeavoring to meet this new demand as far as they can, and are in want of fifty good lay delegates to act as teachers. Any who are willing to go on this mission are requested to address Charles Desmond, at Washington-street, Boston.

—France has 97 schools for the training of teachers, or more briefly, 97 Normal schools; England, 23; Prussia, as early as 1835, 51; Austria, 11; Saxony, 10; Bavaria, 9. In our own country, Maine has two in process of erection; Massachusetts has four; Rhode Island, one; Connecticut, one; New York, one; Pennsylvania, three or more; New Jersey, two; Michigan, one; Illinois one; Minnesota, one; Iowa, one; California one. These are State Institutions, institutions created by and provided for by the State.

NOTES AND QUERIES.

NOTES.

Iroquois Names.—According to Dr. E. B. O'Callaghan, the derivation of certain names of places is given in the following notes.

Schoharie. From *S*, the article, and *Oquari*, a Bear.

Canajoharie. The village of the bear; from *Canada*, village, and *Oquari*, a Bear.

Estaragoha. The Big Rock (somewhere near Tribes Hill, Fulton Co., about 24 miles west of Schenectady); from *Ostenra*, a rock, and *Goa*, big.

Little Falls. Herkimer Co. Astenrogen; from *Ostenra*, a rock, and *Oga*, in the river of water.

Canajoharie Creek. Tecayonharonwe; from *Te*, sign of the dual number; *Cayunghaw*, creek, and *Ongwe*, men; i. e., the two men's or people's creek. It is now called Bowman's creek.

Stone Creek. Schoharie Co: Oneyagine; from *Oneya*, a stone.

Rochester. Monroe Co. Gasconsage; The perpendicular falls.

Cumberland Head. Plattsburgh; Squinanton, from *Oskennonton*, a Deer, which probably resorted to that place.

Cookquayo. or west branch of the Delaware river; from *Kekoa*, or *Okowa*, an owl, and *goa*, big.

Oghquago. in Broome Co., is another form of the word, and seems to mean, The country of the Big Owl.

Caughnawaga. At the Rapid; from *Onawa*, Rapid, and *Ka*, at; custom permitting the changing of the initial *O* to *Ka*.

QUERIES.

"*E pur si Muove.*"—These words, which were the caption of an editorial in the

MONTHLY lately, are sometimes give Eppur si muove. Which is right know of no such word as *eppur* in the Italian vocabulary. Is it not a typographical error? T. W.

[It is not an error of the printer; original phrase was doubtless *E muove* (literally, and yet it moves). *pur* is merely a union of two words, an additional letter being added to fix pronunciation, as is often done in French, and, sometimes, in our own language. *Eppur*, however, is not a word; and the phrase in question be given in its primitive, and, as it is termed, historical form.—EDITOR.]

The "*Short And.*"—Disconcerted by a pupil, who inquired the origin of character (&) so frequently used for Is it an arbitrary sign? UNDER

[It was at first simply the Latin *v* (and), made by extending upward the lower curve of the *e*, and crossing the letter *t*. This form was prevalent through the black-letter era; and its imitation to it is often seen on signs and is now coming into use among founders.—EDITOR.]

REPLIES.

Free Schools.—In the MONTHLY, on of our educational journals, I lately inquired as to the origin of free-school in this State. In the year 1795 an act of the Legislature appropriating £20,000 annually for the term of five years, for the purpose of encouraging and maintaining the schools in the State; the law considered as taking effect on the 1st of April. This was the foundation of the free-school system. MUNN

CURRENT PUBLICATIONS.

IN works of fiction the rules of logic and the ornaments of rhetoric are equally indispensable. The biography of an individual, or the history of a nation, would not necessarily be imperfect although it consisted of the simplest and most didactic sentences. A poem might be alike beautiful and unexceptionable, although it contained no historical facts, no scientific allusions, no important moral truths. But a novel should combine all literary excellence. It should have the distinctive features of history and biography; it

should be as systematic as any scientific treatise; its tendency should be as strong as the strictest code of morals; it should excite the emotions of the heart, and can produce, and through all its elements the spirit of poetry should diffuse its graces, and manifest its power, though it assume no conspicuous and striking form. Such the novel should be, and become. It would be difficult and hazardous to point to a single volume as a specimen of unquestionable excellence. The gradual improvement of style and execution which has long been taking

t least one series of volumes aping to the ideal novel. This consists of three volumes. The these, "Chronicles of the Schönberg-Cotta Family," was given to the through the columns of an Eng-gazine, about a year ago, but was tely republished in this country, permanent form. It is a history ife of Martin Luther, and of the e the Reformation. The second, arly Dawn," soon followed. It d several graphic sketches illustra-re progress of Chri-tianity in Eng-ome of these, though brief, and "Stories," having the essential of a novel. The third appeared . It is the "Diary of Kitty Tre-describing the times of Whitfield Wesley. One fact concerning rks is much to be regretted,—the publication expresses the respect-of the volumes: the third is an copy of the first. In regard to of two things must be supposed,—at "Kitty Trevelyan" finished her fore the "Chronicles" were be-that the author has made the ok "to order," without the inspira-ch guided and controlled her while f the Schönberg-Cotta family. ossibility of combining in a novel us branches and styles of literature lustrated by the first of these works. hronicles" ostensibly comprise the of several members of the Cotta mainly those of Else and Friedrich, e fictitious characters, and whose onstitutes the novel. They are ted as friends of Martin Luther in er years, and opportunity is thus for a biography of the Great Re-The fulness with which this is ings collaterally so many important f that period, as to embody a par-graphic history of the Reformation. h the story serves as mere machin-the presentation of facts, yet, even awed as fictitious writing, irrespect-s purpose, it must be regarded as to the ordinary romances of the ittle Else is as poetically beautiful phrodite, and as pure and womanly louna. She does not boldly obtrude tion, like the "maiden of the ow," and the "black-veiled bride"

of certain newspaper romances, nor startle us like one of Oliver Wendell Holmes's literary offspring, the rattlesnake girl; but she has a deeply interesting story, and we alternately smile, and weep, and wonder, during the recital. In the earlier entries of Else's Chronicle are many simple, artless, but suggestive passages like the following:

"Yet it is not suffering in itself that makes people saints, because I don't believe St. Elizabeth herself suffered more than our mother. It is true she used to leave her husband's side and kneel all night on the cold floor, while he was asleep. But the mother has done the same as that often and often. When any of the little ones has been ill, how often she has walked up and down hour after hour, with the sick child in her arms, soothing and fondling it, and quieting all its fretful cries with unwearying tender patience. Then St. Elizabeth fasted until she was almost a shadow; but how often have I seen our mother quietly distribute all that was nice and good in our frugal meals to my father and the children, scarcely leaving herself a bit, and hiding her plate behind a dish, that the father might not see."

"There is one thing St. Elizabeth did which certainly our mother would never do. She left her little fatherless children to go into a convent. Perhaps it was this that pleased God and the Lord Jesus Christ so very much, that they took her up to be so high in heaven."

"They say the souls of little unbaptized babes hover about for ever in darkness between heaven and hell. At Eisenach we have a Foundling Hospital, attached to one of the nunneries founded by St. Elizabeth, for such forsaken little ones. If St. Elizabeth could only establish a Foundling somewhere near the gates of paradise for such little nameless outcast child-souls! But I suppose she is too high in heaven, and too far from the gates, to hear the plaintive cries of such abandoned little ones. Or perhaps God, who was so much pleased with her for deserting her own little children, would not allow it. I suppose the saints in heaven who have been mothers, or even elder sisters like me, leave their mothers' hearts on earth, and that in paradise they are all monks and nuns like Aunt Agnes and Father Christopher."

Friedrich, Else's brother, is a chivalric, but dignified, scholarly character, illustrating the qualities evinced by many of the leading spirits of his age and country. He is both enthusiastic and logical, and the poetical and philosophical features which we require in a good novel are especially assigned to him by the author, as will be

CLUES OF THE SCHÖNBERG-COTTA FAMILY. By themselves. New York: M. W. Dodd. 12mo.

EARLY DAWN; or Sketches of Christian Life in d in the Olden Time. Dodd. 12mo, pp. 397.

DIARY OF MRS. KITTY TREVELYAN: A story of m of Whitefield and the Wesleys. Dodd. 12mo,

inferred on reading this extract from his diary.

"To me that laboratory of my father's, with its furnace, its models, its strange machines, is the most melancholy place in the world. It is like a haunted chamber,—haunted with the helpless, nameless ghosts of infants that have died at their birth,—the ghosts of vain and fruitless projects; like the ruins of a city that some earthquake had destroyed before it was finished, ruined palaces that were never roofed, ruined houses that were never inhabited, ruined churches that were never worshipped in. And yet what it is which has made him so unsuccessful, I can never exactly make out. He is no dreamer. He is no idler. He does not sit lazily down with folded arms and imagine his projects. He makes his calculations with the most laborious accuracy; he consults all the learned men and books he has access to.

"What can it be, then, that makes his life such a failure? I cannot think; unless it is that other great inventors and discoverers seem to have made their discoveries and inventions as it were *by the way*, in the course of their everyday life. It seems to me people do not become great, do not become discoverers and inventors by trying to be so, but by determining to do in the very best way what they have to do. Thus improvements suggest themselves, one by one, step by step; each improvement is tested as it is made by practical use, until at length the happy thought comes, not like an elf from the wild forests, but like an angel on the daily path; and the little improvements become the great invention."

In the case of a work of mixed character, like the one under consideration, its value is determined not by the fictitious elements, but by its biographical and historical features. Here, where most amenable to criticism, the *Chronicles* cannot be wholly exempted from animadversion. Many interesting facts respecting Dr. Luther, not generally known, are appropriately brought together. But the author evinces a fault or weakness common among biographers. The portrait-painter deserves commendation when he overlooks personal blemishes which would mar the beauty of his work. But the biographer—the limner of character—must not assume the privilege accorded to the artist; he may not ignore the faults and idiosyncracies of his subject. The author of *Schönberg-Cotta* displays a knowledge of Luther's life and character which cannot be reconciled with ignorance of some of his errors and weaknesses. Luther is correctly delineated as a generous, vigorous man, as a persevering student, as an earnest philosophical thinker,

as a brave and successful champion of freedom. We see his smiles and hear him talking playfully with and seem to hear the echo of his deep voice in his own sacred songs. Nothing is said of his superstition, his fear of devils and meddlesomeness. No allusion is made to the bigotries evinced by him, and the bigotry with which he denounced others who labored in the cause for which he and it would never be suspected who sees only the *Schönberg-Cotta* that in his Bible commentary, for is eulogized in our novel, he compares certain temporal rulers as to show that polygamy was practiced by the patriarchs, was not at all in contradiction with divine law, and hence excusable in those who assumed to rival the patriarchs as either prototypes or plars; it would not be suspected that the devout doctor was the same Luther who sanctioned and effected the marriage of a powerful Landgrave of Hesse to a wife while designing still to retain whom he yet claimed and recognized.

The omission of a few facts of this kind is the most censurable feature of the work, and in consideration of the abundance of good things presented, must not be set upon. We know of no ostensible work affording the interest, gratification, and instruction derivable from this model.

The principles of the "New Physics" concerning the correlation and conservation of forces, are not well understood in this country by the vast majority of those who wish to keep up with scientific discovery. Only thorough work on the subject published in this country, is that of Tyndall, on "Heat as a Mode of Energy." Dr. Youmans has just published a series of expositions of the *Essays* by Grove, Helmholtz, Faraday, Liebig, and Carpenter, regarded as the most prominent exponents of the new views. His introduction is full of general scientific information, presented in an agreeable and popular manner, unaffected neither by technicality nor by austere simplicity. In this introduction, after a careful defense of chemists against the charge of fostering materialism, he gives us a condensed account of the doctrines of their early expounders, Rumford, Laplace, and Joule. He discusses the claims of Rumford, Joule, and shows our countrymen

4) THE CORRELATION AND CONSERVATION OF ENERGY. A series of expositions, by Prof. Grove, Prof. Helmholtz, Dr. Faraday, Prof. Liebig, and Dr. Youmans. With an introduction and brief biography of the chief promoters of the new views. BY DR. YOUMANS, M. D. New York: D. Appleton & Co. pp. 438.

thoroughly entitled to the honor of first approximating to the mechanical equivalent of heat, and announcing the correlation of forces. Dr. Youmans also coincides with Dr. Tyndall, in preferring the claims of Dr. Mayer, of Heilbronn, to those of Dr. Joule. Indeed, after reading the correspondence on this subject between Dr. Tyndall and Prof. Thomson, and noticing the acrimonious manner in which it was conducted by the latter, one cannot fail to be convinced of the justice of Mayer's claims. The republication of the latter gentleman's tracts will go far to prove the substantial basis upon which his claims rest. One of the most interesting, as well as most important topics, discussed by Drs. Grove, Liebig, and Carpenter, is the convertibility of vital and physical forces. The arguments adduced and ably supported by these philosophers are so clear, that we think no one will be found, a few years hence, to deny the intimate relation of light, heat, and electricity with the so-called vital forces, although now the doctrine is branded and shunned as infidel. It is unnecessary for us to enter into a discussion of the various points presented in the book, as the general principles of the new philosophy were presented in a previous number (Vol. I., No. 10). The essays themselves are too well known to require any extended comment. Their style is in most cases simple, and devoid of complex technicality. The brief biographical notices by Dr. Youmans give the book an additional value, by presenting a general knowledge of men concerning whom we know but little, notwithstanding the celebrity of their names. The book is in clear type, and is well bound. It should be in every thinking man's library, as a companion to Dr. Tyndall's finished treatise on heat.

The word "Essays" on a title-page has become suggestive of forthcoming dullness. We hope it will not deter our readers from examining one of the works of Herbert Spencer, lately reissued in this country. His writings are original, alike in matter and in style, as full of life and vigor, and as instructive as those of Ruskin, which they in some degree resemble, though more condensed, and of more practical character. The first essay in the volume referred to is especially worthy the attention of every teacher and literary person. Brief and comprehensive, it does more to remove the mysteries of literature, and to give the philosophy of style, than any other treatise—it may almost be said, than all

other treatises—with which we are acquainted.

The recent death of a distinguished prelate gave rise to various imperfect biographies and incomplete compilations of his papers scarcely entitled to the little notice they received. A complete collection of his writings has been undertaken which will prove worthy the name of the venerable Archbishop, and will do much to perpetuate his fame. The volume already issued contains many of his most celebrated sermons, lectures, letters, and speeches. His speeches on the "School Question" are given in full. Some of the lectures, as "The Influence of Christianity on Civilization," "The Influence of Christianity on Social Servitude," and "The Mixture of Civil and Ecclesiastical Power in the Middle Ages," give not merely the prelate's views, but present facts respecting the history and policy of the Roman Church with which few Protestants are acquainted, and the dissemination of which would tend to loosen the stones of an insurmountable wall of partition.

Mr. Gage, whose interest in the cause of public instruction is well known to the readers of this MONTHLY, has performed a most valuable service for science and literature, by the translation of Ritter's "Comparative Geography." With natural enthusiasm, he calls the book "the bright, compact crystal of Ritter's Life," and on examination it really proves to offer the condensation of his immense and varied researches—the net results of his lifelong studies. It is a work which, though simple and unpretentious in its form, exhibits, in every page, the full command over materials, and the masterly power of generalization that characterize the productions of the few gifted minds from whom a new science receives its form and impress. Carl Ritter may be called the creator of Comparative Geography. His name will always stand highest amongst those who have taught mankind to regard the earth—their habitation and abiding place—as a subject of profound and exhaustless investigation in its various relations to the physical progress of the race, and its advance toward perfection in the scale of animated beings. The simpler an idea is in itself, the more difficult it often is found to realize it. Our ordinary methods of Geographical instruction are encumbered and perplexed with

(6) THE COMPLETE WORKS OF THE MOST REVEREND JOHN HUGHES, D. D., Archbishop of New York. Edited by Lawrence Kehoe. New York: American News Company. 8vo, pp. 670.

(7) COMPARATIVE GEOGRAPHY. By Carl Ritter, late Professor of Geography in the University of Berlin. Translated for the use of Colleges and Schools, by WILLIAM L. GAGE. Philadelphia: J. B. Lippincott & Co. 12mo.

(8) ESSAYS: MORAL, POLITICAL AND ÆSTHETIC. By HERBERT SPENCER. New York: D. Appleton & Co. 12mo, pp. 322.

artificial and empirical distinctions and divisions. These must be laid aside by those who would grasp creation in its widest sense, according to the plan adopted in this admirable manual. Here the student is at once brought face to face with the great facts of nature, instead of the arbitrary systems of man. A brief introduction, defining the place of our earth in the solar system, and its special cosmical adaptation to the necessities of the human race, opens the work. It is instinct with glowing thought, and cannot be read without awakening an ardor for the subject kindred with that felt by the author. The surface of the earth, considered in its most general relations, then follows. These include: its spheroidal form; threefold covering, of air, earth, and water; contrast of land and water hemispheres; forms of the great land masses, their influence on civilization, etc., and constitute the first section of the book. In the second part a nearer view is taken of the earth's surface, and its configuration is studied and explained under the heads of—Highlands, Mountains and Mountain lands, Plateaus and their origin, River Systems, Watersheds, Lowlands, Plains, and Depressions, etc., all treated with the clearness of one whose knowledge places him on a commanding height, viewed from whence order takes the place of confusion, and the plan of what appears to others "a mighty maze," becomes self-apparent. The third division masses together the separate results acquired by the previous method of investigation, and applies them to the structure of continents, their dimensions, articulation, etc., and the effects arising from their physical structure on the nations that inhabit them, as displayed in the course of the world's history. It will, then, be seen how rich and suggestive becomes the study of Geography, when pursued with this breadth and thoroughness, in connection with the science of man. "In the people the country finds its reflection." On this basis must be founded all true philosophy of history. "The whole constitution of man is thoroughly connected with the earth on which he dwells—the roots of his being run down to it in uncounted numbers." By thus linking together the moral with the physical phenomena of creation, a new life is breathed into the dry bones of what was formerly the most arid of sciences—burdensome to the memory of pupils and incapable of fixing their attention. We can now, however, imagine no study more fascinating to the mind of an intelligent youth, than the views so ably promulgated in this book, if presented in connection with some good series of Phys-

ical Maps, like those now in circulation by Professor Guyot. then be ennobled in his nature, by in the eloquent words of our author "the Earth finds its highest mission relation to inanimate nature, but world of intelligence,—the mind dwell upon it—the spiritual world it gives bodies." He will learn it as "the home of advancing helping them all onward, and them new power to fulfill the exposures of human life."

Owing to the general introduction of oratorical exercises into America especially in the form of recited declamation, our demand for suitable books has surpassed that of any country. Compilers and publishers tempted to meet this demand; too few exceptions, the results have been unsatisfactory to judicious readers. Large "Speakers" have been numerous containing many selections in prose and verse, but few of which are of value. Many of these works either have no literary instruction, or merely anatory treatise, in small type, and of practical utility. They are deficient in many essential elements, afford no aid in pronunciation, giving no definitions, explanations of classical allusions, and have not even such an analysis as shall enable the student clearly understand and appreciate the thoughts and feelings to be expressed. Among the few truly meritorious in this department, Mr. Philbrick's *Speaker* deserves to occupy a prominent position. The suggestions on declamation in his introductory are, in the main, judicious and His selections in prose and verse are numerous, varied, and conveniently embracing, in addition to the usual standard selections, many extracts from recent speeches, poems, and other literary productions. The biographical sketches, citations of doubtful words, explanatory marks, etc., "for the sake of the artist in the page," appear in notes at the end of the volume. The notes are not numerous as they should be; neither wholly free from mistakes. *W. been'-ghen* given as the pronunciation of Bingen (bing'en); *ar-mah'-dah* for da. The print, paper, and mechanical execution are remarkably good.

(7) THE AMERICAN UNION SPEAKER: contains recent and recent selections in prose and poetry, and declamation in schools, academies, and colleges. With introductory remarks on Education, and story notes. By JOHN D. PHILBRICK. BOSTON: GARD & THOMPSON. 12mo, pp. 562.

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HARVARD COLLEGE.

WE have been interested in examining the late reports of the president and treasurer of Harvard College, made to the overseers of the institution. This oldest of American colleges is very justly the pride of its alumni, and of the State in which it is located. It seems to symbolize, in little, the rise and progress of this great country, of which it is the ornament. It began almost with the first settlements in New England; and in all the early struggles of the Colonies, and their subsequent successes, and their present unbounded prosperity, it has struggled, succeeded, and prospered.

We take a few points from these reports for consideration.

1. *The Property of the College.*—Exclusive of buildings, grounds, libraries, etc., which have no pecuniary value assigned to them, the property is classed as follows:

Funds appropriated to the academic department.....	\$218,409.14
Scholarships.....	184,248.81
Professorship funds, etc.	350,655.77
Library funds.....	89,505.60
Law-school funds.....	22,948.68
Observatory funds.....	112,688.21
Theological-school funds.....	117,685.29
Lawrence scientific-school funds.....	176,087.17
Medical-school funds.....	88,069.99
Miscellaneous special funds.....	542,011.40
Funds in trust for purposes not connected with the college.....	19,881.73
Total property in funds.....	\$1,772,078.28

There is a delusion in public opinion, that higher institutions of learning ought to pay their own way; and that those who desire to enjoy the advantages of such education ought to be willing to pay for it, at whatever rate it may cost. The principle

is not sound. No great institutions of learning have ever in the world's history been sustained by the income from their pupils. Every one of the great universities which have made the old world famous, has been largely and liberally endowed either by government bounty or private munificence. Education is not a commodity which may be left to the regulation of supply and demand. It devolves not on individuals to buy for themselves the learning by which they are to benefit society; but it devolves on society to provide for its individuals that education, in kind and quantity, which its own best interests demand. The individuals who will be most receptive of education are very often: not those who have the means to buy the opportunities for getting it. Harvard College has wisely provided large scholarship funds, by which the education of poor students may be facilitated; and the president has wisely in his report urged their increase.

We call attention too to the library fund, which provides a considerable and continuous accession to the library. And we ask that those institutions anxious to connect vast observatories and expensive apparatus with themselves, should note the amount which is needed to carry on in a very moderate way the necessary operations in such an institution.

After observing the magnificent endowment of Harvard College, and reading President Hill's urgent requests for still further endowment, no one can fail to see that if we would have institutions of the highest grade, it must be by the noble and

continued munificence of the rich men of our land.

2. *Government of the College.*—The president's report alludes to the widely reported outrages committed on Freshmen at the beginning of the present year. He seems to have been, perhaps justly, annoyed by the exaggerated statements and unjust imputations circulated by the newspapers. No one but a college officer can appreciate how difficult it is to root out abuses which have grown up during years of toleration. Public opinion will not and does not sustain the application of the same severe punishments to offences committed by students, in pursuance of some venerable but detestable precedent, as to ordinary offences. The readers of this magazine will remember the astounding instance of toleration of student disorders, mentioned in connection with the opening of the Edinburgh University;—where the venerable and distinguished head, Sir David Brewster, is annually at his opening lecture assailed by hooting, and stamping, and cat-cries, and pelted with missiles. And yet this annual mob, which would disgrace a New York city Sixth Ward primary meeting, has been tolerated for twenty years.

The great difficulty in punishing such offences lies in the detection of the offenders. The code of student honor which prevents the giving of information by one against another is, in innumerable instances, an insurmountable barrier. The poor Freshman who has had his door broken in, his clothes stripped from his back, tossed in a blanket, soused in dirty slops, feels, notwithstanding, bound next morning to say that he does not know one of the cowardly wretches who "hazed" him. President Hill makes a novel suggestion in regard to remedying this evil—nothing less than that it may become expedient that the State should appoint a Trial Justice in the neighborhood of each college, whose special duty it shall be to ferret out offenders of

this character. It is possible that plan would be the most effective that could be adopted. Whenever public opinion becomes as severe upon offences as upon like offences committed by others, the difficulty will be removed, and perhaps the enforcement of measures against student depredations will be more effective towards educating the public mind in this wholesome severity than anywhere else. This subject demands the attention of the conductors of colleges everywhere. We submit whether the time has come for a general and wholesome reformation in the treatment of student offenders.

This report of the condition of the College gives us new reason to congratulate it upon its good fortune in its choice of presidents. Among all the great men who have presided over it,—Mather, Edward Everett, Jared Sparks, and Cornelius Felton,—there has been none better fitted for the place than President Hill. With learning of the most kind and profound character, he has the characteristics of a practical educator. He is familiar with nature, "from the acorn that is in Lebanon even to the hyssop that springeth out of the wall." He can compute the curve of a comet's path in a place where a meteor will strike the earth. He has contrived a machine which will indicate within a minute or two the time of an eclipse. He can discuss "bugs" with Agassiz, mathematics with Pieter, botany with Gray, Greek with Sophocles, and can write poetry that may be commended even in those poetical societies where Longfellow, Holmes, and Lowell are touching their harps. In addition to this, he can see, with his broad grasp, the whole domain of human knowledge, and can adjust, adapt, and systematize it into one connected and harmonious scheme of education. Such a man is the president of Harvard College.

POPE once engaged in an argument on an obscure line in Horace. A young officer observed that a note of interrogation put at the end would make it clear.

Pope, little, deformed, and vexed, said, "Do you, sir, know what an interrogatory note is?" "Yes," was the answer, "a little crooked thing that asks a question."

OUR MILITARY SCHOOLS.

MILITARY discipline and drill should occupy an important place in our educational system. Upon this point the old schoolmaster, *Experience*, has given us some very convincing evidence, to which theory can add nothing and from which argument can take nothing away.

The rapid increase in the number and popularity of military schools of late years, seems to indicate that the people at last appreciate the necessity of being prepared for war,—and this is the surest way to prevent war. It was our total lack of military spirit, and our unprepared condition, that suggested to the Southern leaders the possibility of obtaining by force of arms what they could not by means of cunning and ingenuity. We waited until the war was upon us, before we began to prepare the material for making good officers and soldiers; and it nearly proved our ruin.

We might with as much safety begin to extemporize coast defences, with a hostile fleet in sight of our harbor, as to organize an army from raw recruits, with the enemy marching on our capital.

We may be prepared for war in two ways,—by keeping a large standing army, or by educating the people in the use of arms, so that an efficient volunteer force may be rapidly organized. The latter plan is the only one consistent with national prosperity and the spirit of our republican institutions. There are, however, some requirements for the successful prosecution of a war, which no amount of popular military education will enable the volunteer system alone to meet. There must be a great military leader, with genius to direct the complicated machinery of war, to grasp and frustrate the designs of the enemy, and to plan great strategic movements. Such a man no training will produce. He seems to be heaven-sent, as Castor and Pollux, when they came from the gods to the routed Romans at the lake Regillus. There must be, also, experienced assistants to superintend the execution of great movements, who are acquainted with all the appliances of war, and familiar with all the resources of modern engineering. These

men must make military science a profession. They may receive their training at the national military academy; and in order to give them practice and employment, and at the same time provide a nucleus for organizing the volunteers, a small army of regulars must be maintained. This has, in fact, been the policy of our government heretofore; in which few, if any, improvements could be suggested.

But it is in the great mass of the volunteer army,—the rank and file, with the officers immediately in command,—that the need of popular military education is felt.

Here was our weakness at the beginning of the war. The army was composed of men hastily brought together from the various walks of life, entirely ignorant of drill and the use of arms, unaccustomed to obey, and despising, with democratic instinct, all distinctions of rank. These men, to a great extent, were commanded by civilian officers, with nothing to recommend them to the position but political influence. Such officers could have no ability for leading in battle, or for providing for the health and *morale* of their troops in camp. Few men can command with decision and confidence at first. Authority is acquired by practice, and seldom inherited by nature.

The military discipline of the boarding-school (which is in no way a hindrance, but rather a help to other departments) is well adapted, if thoroughly carried out, to remedy these difficulties. Boys may be taught at school to be very expert in the use of weapons, to execute with precision all the evolutions of the company and battalion, and, what is of equal importance, to obey promptly and silently. They will learn also to respect distinctions of rank and military etiquette, which are absolutely essential to discipline in the army. Those that have sufficient experience and ability are appointed officers, and learn not only to give the word of command with decision, but also to exercise authority in a judicious manner. A week or two spent in camp during the summer, will give an opportunity to learn the details of camp life, and be an excellent preparation for actual ser-

vice. A volunteer army composed of men and officers thus trained in youth, and directed by experienced leaders, would be scarcely inferior to a regular army. In many respects the volunteers would have the advantage: they would, as a general thing, possess more intelligence, more pride of family, more enthusiasm, and better habits, than the regulars, while at the same time they would be nearly or quite as easily handled in the field.

It is of great importance, then, to the country, that our young men receive, as far as practicable, a military education. To effect this it will not be wise to trust entirely to private enterprise,—the original outlay and the running expenses of a thorough military school are too great, and public patronage is too uncertain. While the national government supports the military academy and naval school (which

ought to be the best in the world), and, as heretofore, in time of peace keeps a small regular army, it devolves upon the State governments to encourage military education in the States. This may be done by establishing State military schools, and by supplying private schools with the ordnance stores necessary to organize a military department. Schools thus supplied should be required to make regular returns and reports to headquarters, and should be examined every year by the State commissioners. This would insure a proper use of the public property, and be a great incentive for the pupils to excel.

We have so far considered military education only in the light of public expediency; we may in a future article answer some objections urged against it, and point out other advantages to be derived from it.

DR. ARNOLD OF RUGBY.

WE know of no more valuable book for the teacher's library than the life of Dr. Arnold, by Dean Stanley. We have heard of Dr. Arnold, the head master of Rugby School, and few are unwilling to regard him as the prince of schoolmasters. All who have read a "Letter from London" in the newspapers, have heard of the brilliant sermons of Dr. A. R. Stanley, Dean of Westminster Cathedral. In these two men we have the teacher and the pupil, the latter being the biographer of the former: unless we prefer to consider Dr. Stanley the editor of the Life of Dr. Arnold, rather than his biographer, since he compiles rather than comments. At any rate, which is not always the case, the painter does not stand between you and the picture, but allows the life under discussion to develop itself by numerous selections from letters and diaries. Thus we get the entire inner life and thoughts of the great teacher, so far as the pen unrestrainedly used transcribes the mind.

Although the mind is so far superior to the face, and the heart to the countenance, our eye has rarely fallen upon a counte-

nance so filled with thought and feeling. Few as forcibly remind you of the difference between the Latin *os* and *vultus*, the *features* and the *expression of countenance*. Of all the faces of distinguished educators which we have had the pleasure of seeing, none have left so striking an impression of commanding power, of earnestness, of unselfish love. The engraving of Dr. Arnold in the first of the two volumes containing his life is a profitable daily study for the teacher. We hardly know how one can better refresh himself, after coming home exhausted from school-room labors, than to take up and study this life and this face. Experience has proved this assertion. The change from the atmosphere of the school-room to the presence of this living, enthusiastic, sympathetic man, reanimates and encourages the teacher. For you are in the presence of a Christian teacher, a practical teacher, and a teacher who loved his work.

If any one ever Christianized school keeping, it was Dr. Arnold. The practical Christianity of the heart was a working principle with him. He carried his relig-

ion into the school with him. It helped him govern, it helped him instruct, it helped him educate in every sense of the word. How much better is this than to do as some men do, who leave their religion at home like their best coats when they go about their business! In Dr. Arnold's eye, step, voice, and word, there was the simplicity of love. He wrote his chapel sermons to the boys the hour before meeting them that he might the better hit the immediate state of their minds. He said, with regard to reforms at Rugby, "give me credit, I must beg of you, for a most sincere desire to make it a place of Christian education." He ate, walked, bathed, and studied with his pupils; and, although in these intimate and cheerful relations, he never forced upon them religious topics of conversation, he was ready to answer and discuss any religious or moral question.

But with all this loftiness of thought and demeanor, giving him that dignity which a boy respects and fears, he was a man of such simplicity and of such common sense and knowledge of boy-nature that he was a practical teacher. Just as his religion was of that genial nature which attracts rather than repels, so his remarkable scholarship and cultivated manners were of that objective, generous stamp which won the confidence of boys. Dr. Arnold, unlike a great many who are called scholars, at the present day, was not a *receiver* only but a *doer*, not the pool filled to the brim yet with no outlet, but the pool which sends out its life-giving stream gladdening the valley. He was an active, not a passive man and scholar; the hammer, and not the anvil.

He penetrated to the mind and heart of a boy. He knew by an intuitive glance what was the status of his mind, thoughts, and disposition. Dr. Arnold was most successful in teaching by question and answer, because he had the power of discerning so readily and accurately a boy's mind and knowledge; and he had the knack of putting his questions so as to draw him out, that is—educate. With him a recitation was not a grave examination, as is sometimes the case, but instruction in the highest degree. His questions pressed the mind to its extreme tension, and thus left

it aglow with mental warmth and ardor. But Dr. Arnold taught because he loved to. Nature gave him his commission, and of course he was successful. This love for the work is rare in a teacher of Dr. Arnold's calibre and character. Some teachers have the power of impressing upon scholars the conviction that their work is of great practical importance, and the scholar takes hold of it with zeal for this reason. Other teachers have the power, where the conviction of this practical importance is wanting in the scholar, to induce so lively a mental excitement by the mode of questioning and the order of the recitation merely as to charm the mind fond of novelty and excitement. Dr. Arnold excelled equally in both these respects from his love for educating, for imparting knowledge; in a word, on account of his innate love for bettering the heart and mind.

Dr. Arnold threw himself into the sympathies and thoughts of his boys and knew what suited a boy's mind. He ruled by love, a kind of ruling which some men are incapable of, and which others are too indolent to employ. Consequently, instead of being a monotonous *driller*, he was the leader of his company of youths into the arena of mental trial and into the conflict with evil. They respected, loved, and trusted their leader. When the teacher loves and respects his work there is a warmth and enthusiasm which is its own reward. As usual in such cases the lesson acts as discipline enough. It is surprising to see how the manner in which a lesson is learned and in which the recitation is conducted affects the order of the recitation room.

Is there but one Dr. Arnold in a century? Is there but one such teacher who seems to have received a seal from God to make us realize how great and honorable a work we are engaged in, and how much happiness there may be in it, if it be undertaken in a Christian, practical, and enthusiastic spirit? Dr. Arnold seems to have stepped into the ranks of teachers to show them that theirs is really a profession. We cannot contemplate his life without being bettered, and without feeling that it invites us to an effort to bring the teacher's work to a higher stage.

THE HEALTH OF TEACHERS.*

PROBABLY all normal occupations are healthful unless they are conducted in a manner not justified by the laws of the body and of the brain; but if there is one single occupation the engagement in which should be peculiarly promotive of health, it is teaching; because this pursuit gives healthful mental excitement, constant intercourse with the young, who are almost always hopeful, mirth-provoking, and buoyant; because regularity, cleanliness, and good habits, are demanded; because the number of hours of labor is less than in almost any other pursuit, thus giving the teacher an opportunity to recreate, exercise, etc., etc. And yet teachers as a class are not healthy. Where they follow their profession faithfully and without intermission, they, with few exceptions, rarely hold out more than ten years. Often a single term is sufficient to destroy their health and usefulness. The country is full of *broken down* teachers, most of whom are of that age when they should be in the prime of life. Their throats give out; they have dyspepsia, liver complaint, torpidity of the bowels, coldness of the hands and feet, muscular debility, consumption, and nervous disorders. What are the causes and what is the remedy, are the questions. Without going into details, I will enumerate a few of the most prominent causes of ill health and an early failure of the bodily powers in this most useful and highly cultivated class of our population.

First among these causes is the too early entering upon a teacher's life, with the excessive mental strain necessary at that age to fit one for occupying the position. Haste always makes waste, unless it is haste to change bad habits for good ones. To consume, at a time when the body is perfecting its organism, the nervous energies upon the brain and nervous system, thus robbing the body, defeats a very important end, and one that has an important bearing upon physical integrity. And yet this is constantly done. Youth all over the country, sixteen, seventeen, and eight-

een years of age, are found occupying the pedagogical chair when they ought to be growing; they are using on the brain and nerves too much of their life-power, and the result is premature exhaustion, a dwarfed body, broken down nerves, and ruined health. No young person who values soundness in his own person half as much as he does in a horse, should enter arduously upon the duties of a professional teacher, until his body is thoroughly developed and in a robust state.

Another cause may be found in the ignorance which exists in relation to physiological law. Physiology in a general sense is one of the *exact* sciences. Physiology is to human health what mathematics is to computation. To violate the rules of mathematics in settling commercial and business transactions leads to the worst of results, financially; to violate the rules of physiology destroys health. Business men see this, and will not employ an accountant who does not understand arithmetic. Now, when we show the same wisdom in making the laws of life and health as thoroughly taught as we do mathematics, we shall have few mistakes made in living, and little ill-health. No teacher should enter fully upon his profession who is not as thoroughly versed in physiology and the necessity of physical culture, air, exercise, sleep, proper clothing, mental hygiene, bathing, exercise, etc., etc, as he is with the rules of grammar or the multiplication table. Physical culture, its uses, laws, and the best means of obtaining it, should be as well mastered by the teacher as the alphabet, both for his own personal good and for the welfare of his pupils.

Lest I be less practical than I should, I will now enumerate some of the special causes of ill-health among teachers. And first comes the excessive nervous or mental strain which a teacher is obliged to maintain in governing his pupils, and in imparting instruction. To teach well requires that the brain be in a high state of activity, while the muscular and digestive system are not called into high action. The strain comes too much in one place. For a while

* Dr. Holbrook, in *Herald of Health*.

the nerves grow stronger for this, but unless at the same time the muscular, digestive, and circulatory organs be kept healthy and strong, there is want of balance produced, and, sooner or later, the person breaks down. Very often this excessive strain is, with our present defective school system, unavoidable. Too many pupils may, and often do make it necessary either that the teacher should bear the burden or quit the business. Sometimes the teacher is not adapted to his school, nor capable of governing or of teaching it, and this occasions friction and the excessive labor which produces the ill results. These things *seem* unavoidable, but in a very large proportion of cases the effects could be remedied by a wise system of physical culture. Every schoolhouse in a city, every college and young ladies' or boys' seminary or high-school, is defective without its gymnasium, where physical training can be secured, for both teacher and pupil. These, however, are not yet available to a great extent, but gymnasiums are being established in most of our cities, to which they should resort. Two evenings each week devoted to wise physical culture, will do very much to keep teachers in health. Those who live in the country may for gymnastics substitute out of door sports, gardening, skating, horseback exercise, and botanical, geological, and other excursions. The true way to teach botany, geology, and geography, is to do it in considerable part out of doors. The same is true of surveying and kindred sciences. I rank wise physical culture as one of the most important means of keeping teachers from that host of nervous disorders to which they are subject.

Next comes air, or rather pure air. If we were always as particular not to breathe foul air as we are not to drink dirty water, we should have a different race of beings, physically, from what we now have. It is a physiological truth that the amount of nervous and muscular energy manifested by all living creatures, from the lowest polypi to the highest vertebrated animal, is about in proportion to the amount of air they breathe. We live in proportion to our breathing. Now, teachers proverbially violate the law of breathing, and suffer for

it. Confined in a room with from thirty or forty to one hundred children, who consume the air rapidly and contaminate it with that deadly poison, carbonic acid, besides other deleterious gases, the air of a school-room, ventilated as a majority of them are, soon has a peculiar stench, most offensive to one who is in the open air much, but quite unobserved to the inmates. If there is *one* thing which teachers ought to do, it is to ventilate, most thoroughly, their school-rooms. It is also a well understood fact that the clothing, if tight about the chest and waist, even if no tighter than a fashionable gentleman's vest, cuts short the amount of air inspired several per cent., and with it the amount of life and health. All ladies who teach school should take special pains to wear the clothing loose about the breathing apparatus, if they would breathe well. The corset has shortened the life of many a school teacher, and made what there was of life less effective.

In this connection I might also add a few hints about the health and vigor of the muscles of the chest, back, and abdomen. The occupation of teaching does not call these muscles into vigorous exercise daily, consequently they grow weak, flabby, and almost useless. A young man or young woman after following this profession a few years loses strength of sides, back, abdomen, and chest. Now, the health of an individual depends largely upon strength here. You can pretty clearly estimate a person's health by the vigor of the muscles of the chest and back. If teachers would put these muscles to the test daily, so as to retain them in vigor, they would find disease prevented and health restored in a multitude of instances. Perfect breathing depends largely upon the health of these muscles. A few exercises which have this end in view should be practiced daily. A few moments should also be given every morning to deep inspirations and expirations, so as thoroughly to expand the lungs and aerate the blood.

Perhaps I ought to say one word in regard to food. Teachers usually get enough of *what is called the best of food*, unless they board at city boarding-houses, when their case is generally a hard one. This

"best of food" is, however, too often the very worst. I need not here go into a discussion of diet; suffice to say, abundance of *plain substantial* food ought to be the rule, and all spiced, highly seasoned, and in common parlance, "rich" articles, should be religiously avoided. The delicacies and luxuries which a perverted appetite seeks, in pies, cakes, and pastries, ought to be found in the best of fruits.

A teacher ought to sleep abundantly in order to give nature a chance to restore and build up what action has torn down in the wakeful hours. Most teachers would be benefited by eight hours' sleep every night.

The daily bath should not be forgotten. I know that there are a multitude of persons in this profession who think they cannot bathe without injury. Let all such study the philosophy of bathing, and with great care train themselves to it, when they will find it not only a luxury, but a health preserving habit.

Cold hands and feet are very common with sedentary persons, and with nearly all who think or use their nerves much and their bodies little. Cold feet show a want of equal circulation, and, when they

become habitual, are a source of much discomfort and disease. Proper exercise, particularly dancing, and the stamping and other feet-exercises of the new gymnastics, are some of the best remedies.

There are few professions where good health is more important than to the teacher. They can govern their schools and impart instruction easily and thoroughly when well; but when ill, every thing goes wrong. Many a pupil has had his ears boxed and his back striped because the teacher was out of sorts, and often the health and good nature of the teacher has caused him to pass over, as of little moment, even grave offences. I am more and more convinced every year that teachers are poorly qualified to fill, properly, their vocation, unless they have sound constitutions, thorough physical culture, and physiological knowledge. These, added to the most thorough drill now given, in normal schools, seminaries, and colleges, would make them the most healthy class of our citizens, instead, as now is too often the case, nervous, dyspeptic, scrofulous, and consumptive and broken down in body, before they have come to maturity.

TEXT BOOKS.

NO country is better supplied with *variety* in text-books than our own. Many of these books are of the highest order of excellence. Their peculiarity consists in simplifying the subject to the capacity of a schoolboy: mathematical books are special examples of this. Algebra is studied understandingly by pupils less than fourteen years of age, and even the Differential Calculus sometimes forms a part of an academical course.

Books in every department of science have been adapted to school use. None of the "*ologies*" have escaped the school-book makers, and we have "First Books" in almost everything, with "pictures" in all styles. Some books are full of "cuts," many, it is true, sordidly executed, but others really a credit to the engraver's skill, and sometimes far better than the

text. We have books in "series"—regular progressive courses from No. 1 to perhaps 20,—Readers, Arithmetics, Physical Sciences, and Languages, adapted to any age of pupils or grade of school. Some of the elementary volumes are written in so agreeable a style that old students, and even some teachers, may read them with pleasure and advantage. Still, with all this, there are "loads" of them that are only like the "wooden nutmegs," made to sell. A "Series" is something made by clipping one book and making another out of part of the cuttings,—a little smaller and cheaper; this is then a "First Book" or "Introduction" to its parent. If we are to judge of a book by the recommendations of it which we may read, we would often be sorely deceived. So also, if we suppose that a book is the very best of

its class, because adopted by some State Board of Education. The truth is, few of these things are voluntary or disinterested, and it would be far better and fairer, in all cases, that text-books for Counties or States should be selected by a convention of experienced teachers. Publishers should furnish teachers with their books on very liberal terms, so that they may be tested in the schoolroom. We venture to assert that no schoolbook can be properly estimated, except by actual use in the classroom. Merely turning over the leaves, or reading the preface, is insufficient. Let any one examine the score of modern Arithmetics, and he will be much perplexed in deciding which is the best in all respects. The same is true of Grammars, Histories, and Geographies. School officers who are not practical teachers, should not undertake to "fix" the text books for their jurisdictions without, at least, a consultation with the teachers who are to use them.

A text-book should be devoted to its own subject. An Arithmetic should be an Arithmetic; not a mixture of a little mensuration, a little Geometry, and a little Bookkeeping. These subjects need separate treatises. Some Geographies have a little of Astronomy in an appendix, and a modicum of Geometry; and some Histories have a heavy percentage of Geography. This would be all very well if these additional subjects were not also a regular part of the school studies, and treated of in due course. Besides, the little which they have room for violates the significant injunction:

"Drink deep, or taste not the Pierian Spring."

Again, the books professing to be a "Series," regularly progressive, seldom are so; the second book is mostly a repetition of the first, with some additional matter; the third, a compound of the first and second, and so on. Some "Higher Arithmetics" have even little examples in simple addition, the multiplication table, and the like, with pages of other matter that was fully treated of in the lower numbers of the series. This constant repetition of very simple and primary matters in *all* the numbers is out of place in a "Progressive

series." A good course would be, one that contains nothing in one number which is already disposed of in another. Let us take Arithmetic as an illustration. A child commences this, say at six years old, and continues it, more or less, till sixteen or eighteen. Now for the child of six, we need only a work containing the tables for counting, adding, and so on; when these are well learned we need a book containing a *very great many* mental and slate exercises in the fundamental rules, for children learn mainly by constant repetition, and the best-worded book is nothing to them in their early career. After these primary rules are well practiced, we need an ordinary Arithmetic containing only the useful and practical, largely illustrated with examples, an intellectual as well as a ciphering book, but with no puzzles, no algebraic or geometrical questions, and every rule well explained and analyzed, with constant review exercises. There is no necessity nor wisdom in having an Intellectual Arithmetic separate from the common one. Mental and slate exercises should go together through all the numbers. Then we need a "Higher Arithmetic," taking up the properties of numbers, all the varieties of solutions that can be advantageously used, with full explanations, entering into the rationale of the various processes, all the difficulties that occur in calculations, all the niceties of the science, with the most concise methods of operations, such points, in short, as would be little understood or used by younger pupils, omitting all the simple questions that every school-boy of ten or twelve years of age knows full well. A certain "Higher Arithmetic" has the following: "*Find the product of 345 by 3,*" and even this fully worked out. Such questions are as much out of place in a "Higher" arithmetic, as one involving complex fractions would be in a "First Book." The same thing occurs in almost all other "series"—Algebras, Geometries, Geographies, etc.—the *higher* book is but a repetition of all the lower ones. If a school uses a "Series," let it be a real series, adapted to successive classes who are progressing. But some are declared to be progressive only in this, that they are adapted to different *grades* of schools,

the Infant, Primary, and Grammar schools, Academies and Colleges. In this respect they are well named and adapted; but a real progressive series *for the same grade of schools* is yet a desideratum.

Let us hope that a truly *progressive* "Series" may yet be published, and that text-

books will be adopted because of their real merits, by conventions of practical teachers. After all, text-books are only auxiliaries in teaching, and those are the best which furnish the living teacher with the most suitable materials for his instructions and illustrations.

STRAY CHAPTERS FROM THE HISTORY OF A STINGY FAMILY.

THE FLINT SCHOOLHOUSE.

WHEN Thomas Flint was five years old the old log schoolhouse in his father's district was razed to the ground by a furious storm. This astonished all who had ever seen the said schoolhouse, for the openings in the wall were so large and numerous, that it was supposed the wind could have passed through without serious interference. Nevertheless the building had fallen and the honor of the town required its rebuilding. Hence arose a great discussion as to the proper location. The old schoolhouse was built on Mr. Flint's farm, at a spot which, being utterly unfit for cultivation or any thing else, he had with singular generosity donated, on condition, however, that his family should have "free schooling." It was now proposed to rebuild the schoolhouse on the same spot; but a large and influential body of townsmen, living in the west end, determined to have it somewhat nearer themselves. Such arrant selfishness was promptly resented by the indignant residents in the east. Mr. Flint's farm lay just fifty yards east of the central line, and he naturally joined those from the east. As soon as his decision became known, the strife of words knew no limit; old friendships were broken, and the peace of the various religious communities was sadly endangered. One clergyman unfortunately took sides in the affair, and public opinion ran so high against him for "mingling politics with religion," that he was compelled to leave the place.

At last a town meeting was called and a vote taken, which resulted in a victory for the east-enders, and all became quiet. A committee of the victors was appointed

with power to rebuild the schoolhouse wherever they thought best. Mr. Flint renewed his liberal offer, which was accepted. The schoolhouse was rebuilt after the manner of the old one, saving that the chimney was somewhat shorter than its predecessor, as a number of bricks had been hopelessly broken in their fall. The old desks were patched and put up, but the benches were useless. It was necessary therefore to procure some "first cuts" from the saw-mill, which were mounted with the flat side up to support the future men and women of H——. The house was finished and the school reopened.

THOMAS FLINT'S FIRST SCHOOLMASTER.

The town of H—— at this time had been very fortunate in securing the services of a remarkably excellent teacher, though at the high rate of "ten dollars a month and found." He was an original character. I have no doubt you have seen him or read of him. In his earlier days he had been a farmer, but proving unsuccessful had converted himself into a physician of the eclectic school. Here, however, he was so unfortunate as to kill about twenty patients during the first three months of practice, and it was thought advisable for him to give new direction to his talent. This he did, and became a teacher, of the orthodox style, possessing great store of muscular strength with amazing paucity of book-learning. The latter indeed he despised, as tending to divert the attention of young people from their legitimate business. He was a thorough believer in "the three r's, reading, 'riting, and 'rithmetic," which, he affirmed, were all that was necessary for any person; more than these came of

evil and would inevitably lead their possessors thither. At this time he was fifty-two years old, and much bent with premature old age or indolence. For the time, however, he was a good teacher; he could wield the birch with a wondrous skill and emphasis, could "mend a pen" with great ease and exactness, and could sit at the fire-side gossiping with the grand-dames of H— beyond all who had gone before him.

THOMAS FLINT'S FIRST WEEK IN SCHOOL.

To this man Thomas became a pupil. Mr. Flint led the unwilling Thomas into the presence of Mr. Williams, the teacher. This individual left his stand and waded through the mass of infantile humanity, that, for lack of room on the benches, took up their quarters on the floor round his desk. After a very brief exchange of ceremonies Mr. Flint introduced his son, and gave him in charge of the teacher. At the same time he affirmed his belief in the depravity of human nature and urged unhesitating application of the rod, assuring Mr. Williams that, should he spare the rod, he would certainly be a hater of the child. To all this the individual addressed gave a decided assent, and, with a terrible scowl at poor Tommy, promised to obey not only the letter, but the spirit of the injunctions. Highly gratified with the interview, Mr. Flint scraped his foot and retired.

A seat was then provided for Thomas, after which Mr. Williams promptly proceeded to open the school by reading the Bible. This over, he delivered himself of a disquisition on the importance of close application to study, assuring the pupils that they, if idle now, would ever after feel as he then felt, that they had thrown away the noblest opportunities ever afforded to mortals. He expatiated at great length upon "the rules of the school." He then assigned lessons to the several classes, and these were nearly as numerous as the pupils, because the great diversity of books prevented any thing like classification. Some other matters of less importance occupied the greater part of the first day. Finally, school was dismissed. Tired and sleepy, poor Thomas went home, only to be sent supperless to bed, to atone for any

possible wrong committed by him and overlooked by the teacher.

During the next day nothing of note happened, but the day following opened full of evil portent for Thomas. His buttermilk choked him at breakfast, he tore his jacket as he passed out of the gate, and crushed his finger in the bars as he put away the cows; in consequence of all which he received severe punishment. But before starting for school matters appeared to clear up somewhat, and though aching in several parts of his body, he went on his way rejoicing, determined to exercise some of the accumulated knowledge of trickery into which he had been initiated by his youthful contemporaries prior to his presentation to the pedagogue.

Mr. Flint was a staunch Presbyterian of the most ancient school, and believed that the only primer which could properly be put into a child's hands was the Westminster Shorter Catechism; which he therefore sent, with a request that Thomas be drilled in "this valuable compend of religious instruction" as often as Mr. Williams might find convenient. Of all books none were more dreaded by poor Tommy than this, since Sunday after Sunday its contents had been poured into his unwilling mind. He determined therefore to evade the catechism in school. Nevertheless the dread of future punishment induced him to take the hated book with the much more hated message to Mr. Williams.

A lesson was immediately assigned, but was so distasteful that it could not be learned. Tommy's attention was soon directed to other matters. The novelty of school had already worn off, the worthy pedagogue was oppressively strict, the older boys becoming extremely annoying, and our poor hero wished himself safely home. His face wore an expression of sorrow and abstraction, which was perceived by a fellow-pupil, who was looking about for something new. Watching his opportunity, he threw a chip at Tommy, striking him fairly on the nose. Tommy's temper was aroused. He tore a leaf from his catechism and, fashioning it into a ball by the aid of his teeth, threw it at his adversary. The movement did not escape the watchful teacher, and, in a second, poor Thomas

was swinging high in air midway between Mr. Williams's head and the rafters. There he performed several acrobatic feats equally rare and picturesque; after which the rage and muscular strength of his instructor failing, he came to the floor with emphatic celerity. He was then left to collect his scattered senses and to reflect upon the muscular development of the master.

He was soon after called upon to recite, when the mutilated condition of his book was discovered. The rage of the teacher knew no bounds. The old rod was insufficient for the occasion. In order, therefore, to afford opportunity for procuring a fresh one, Thomas was advised to wait till the afternoon, when the teacher, having armed and equipped himself according to "pedagogic law," would be prepared to inflict justice. At the same time, Mr. Williams informed the school that the time had now come when his authority must be asserted, and also, that, while he regretted that the first victim should be one of so tender years, he felt that the offender had been born in sin, which had become so thoroughly incorporated in his nature that he was already old in its ways.

In the afternoon came a lengthy lecture on morals and human depravity. Then the school was compelled to witness a public flogging. But I draw a veil over the scene; I need not moralize upon the degrading effects of such an exhibition upon the culprit and his fellows.

Did such punishment do Thomas any good? He only whimpered during the afternoon and refused to study. The pun-

ishment engendered lasting hatred for the teacher: his finer feelings were blunted, and he determined to be "even." Those looking on only laughed at the sufferer and thanked their lucky stars that they had not been caught. The affair, however, had a salutary influence on the order of the school, for during the afternoon not a whisper was heard, and a shudder passed through every one as the teacher approached him.

Friday morning came, and with it came Thomas to school with his father. This gentleman was in high dudgeon at the brutal treatment his son had received; being, strange to say, enraged to find his injunctions so faithfully obeyed. But when he learned that Thomas not only refused to study the lesson, but had torn and stamped upon the catechism, and when he was informed upon other points by the veracious Mr. Williams, his angry feelings were soothed, and he became profuse in declarations of gratitude, promising his son proper chastisement that evening. In this condition he took his departure; but soon after returned for his son, having determined to reward him immediately.

Thus ended Thomas Flint's first week at school. My history may appear to some exaggerated, but those who have sought knowledge in the early log-schoolhouse, can testify to its truthfulness. I purpose in my next stray chapter to give an insight into the mysteries and miseries of that time-honored practice of "boarding around," as developed by the experience of Mr. Williams.

OBJECT LESSONS.

THE SCIENCES.

OBJECT Teaching in Chemistry and Physical Science is principally teaching by *experiments*. If your pupils are to learn the properties of *Oxygen*, you have to produce oxygen in their presence, and to experiment with the oxygen so produced, so that they observe carefully every phenomenon about it. There being several

methods of producing oxygen, you will choose that method which will be most easily understood by your pupils in their present stage of mental development. For the first principle of Object Teaching is to *proceed gradually* to have your pupils fully prepared for what they are to witness, not to assume that they know any thing which they do not fully know by sensual perception and their own conclusions

drawn from it, and to lead them on step by step to the facts of a higher order to be witnessed, and to further conclusions to be drawn therefrom.

With beginners in Chemistry, who do not yet know chlorate of potash or manganese, it is therefore better to produce oxygen not from these, but, as a first experiment, by the poles of a galvanic battery from water, in just a sufficient quantity to make with it a few elementary experiments. If your pupils have before studied Electricity and the Galvanic Battery, so much the better: if not, they will at least understand the experiment, if you first weigh the water before you decompose part of it, and later, what has remained of that water. They will thus be enabled to find that the missing quantity of water must have dissolved into the two kinds of gas, contained within the two glass tubes above the two poles. They will be enabled to conclude from the difference of the measure, to which the water has been driven out by the two gases, that of the two components of water, the one fills double the volume of the other, that gases are considerably more voluminous than the liquids out of which they originate, and some other laws. You tell them now, that the less voluminous of the two gases is called Oxygen, the other Hydrogen; you cork the tubes and begin experimenting with the Oxygen.

At each stage of the proceedings you ask them what they see (or otherwise perceive by their senses), and direct their attention to what they do not see or perceive, but *may* see or perceive. You are careful to make them find the correct expressions and state all their perceptions in coherent and logical language. For the second law of Object Teaching is to *sharpen the senses and the perceptive faculties in general*, to accustom them to careful observation. You ask them next, what they conclude from the facts observed: you must not tell them the laws, embodied in the perceived facts; they must find them all themselves, and your highest merit is in asking them such questions as will *set them to thinking and concluding*. This is the third law of Object Teaching. One correct conclusion, drawn from the facts

observed by the pupil himself, is of more value toward his education than ten hours' preaching to him about the same facts and laws. It is often much more difficult to so arrange your questions that he must hit upon the correct conclusion, than it would be to explain to him in the simplest logical *exposé* the principles underlying the facts. But that very roundabout way, on which you lead him to his own mental activity, is just the indispensable condition of success—you make him self-acting, his own teacher.

It is also essential that you should *exhaust the subject* under treatment as far as possible, without, however, giving too much at a time. The pupil should be enabled to bring you in the next following lesson a written statement of what he has observed and learned by conclusions, or else state the same in coherent language orally. This ought to be a composition, or, if you are, at the same time, a teacher of composition, it ought to furnish the subject of the next task in composition. The more you make your pupils write compositions on matters falling within the compass of their sensual perception and intelligent observation, the better compositions you will obtain of them, the more you will avoid a grievous fault of coterminous education, to wit, the fault of training youth to talking and writing grandiloquent nonsense about matters which are above their comprehension. We need not point out the pernicious effects of such education. Each of your object lessons should, therefore, exhibit a picture, as it were, complete and rounded off, as much as possible, so that each part of it support the impressiveness on the mind of all the others, and that the subject should be, within reasonable limits, exhausted. This is the fourth law of Object Teaching.

You cannot fail to conclude that the proceeding described is of slow progress. It is so, indeed; but only in the beginning. You consume a great deal of time, at the outset and with the elements of each discipline; but you gain in the end. You will develop a far greater percentage of able pupils, than otherwise, who will not easily unlearn what they once have mastered; who will, at later stages of the

course, almost instinctively make out the real point of issue in each fact or theory, who will help you materially in experimenting and save to you many explanations, otherwise necessary. Each of your lessons will become a festival for you and your pupils, and your progress will the longer be accelerated.

It is true, it takes an able teacher to treat Chemistry and Physics in this way. Not only must the teacher be experienced in teaching, quick to perceive what every one of his pupils lacks to a correct understanding, and to apply the appropriate remedy, the questions best adapted to the case, but he must also understand his pe-

culiar branch of science thoroughly. So as regards the latter requirement, we speak from a thirty years' experience with teaching and scholars when we say, that though a teacher can never know *too much*, most learned men are rarely the best teachers, and the best teachers are rarely the most thorough scholars in each particular branch of their instruction. An earnest will in a teacher to reflect credit to his profession and to benefit his pupils will often supply what he lacks in preparation, information, and by repeatedly teaching what he only of late has mastered himself he will at last turn out a good hand at a new specialty.

DREAMS.

FROM the most ancient historic times dreams have been regarded with interest in almost all grades of society. They were formerly viewed as the media of special revelations from heaven, and their expounders were treated with the utmost consideration as beings of higher intelligence, so that if any were fortunate in interpretation, they were advanced to important positions in the government. Among the Greeks and Romans, dreams were regarded as important omens, according to which extensive expeditions were frequently dispatched or delayed. The emperor Augustus, though a man of great talent and refined imagination, was nevertheless so subjected to the superstition of his time that, in obedience to a dream, he acted the part of a common beggar during one day each year and accepted alms of such as chose to present them. The North American Indians entertain exaggerated beliefs in the efficacy of dreams. In modern times, however, among civilized nations, the phenomena of dreams have lost their significance; those professing to interpret them are of the lowest orders, and are regarded as impostors; while those consulting them are no longer the educated and intelligent, but the ignorant and simple.

The nature of phenomena so prevalent and of so much supposed importance as dreams, could not fail to be a matter of

careful inquiry among the ancients. The investigation has not been confined to their superficial philosophers: the subtle metaphysicians of modern times have regarded them as of importance. Reid, Upham, Stewart and Abercrombie have each devoted careful attention to the subject; while such physiologists as Ferriar and Carpenter have deemed them worthy of thorough investigation. For lack of proper physiological knowledge, most of the explanatory theories, offered previous to our century, were based on mere speculation and were frequently of the most whimsical nature. Lucretius, a great expounder of epicurean philosophy, believed that the appearances or spectacles of bodies, constantly borne in the atmosphere, affect the soul in sleep, causing strangely incoherent trains of thought characteristic of dreams. Dion Cassius and Cardan referred them directly to vine interference. Smellie advanced a strange hypothesis, illustrative of the superstitious age in which he lived, that there exists a superior being who controls over us, and who, during our sleep, amuses himself by playing on our nerves thereby producing any sensation he pleases. Baxter, in the same manner, maintains that certain demons amuse themselves by tormenting us during sleep. Haller regarded dreams as mere indications

Numerous others might be cited, suffice to show the variety and force of the speculative theories.

Uses of dreams are now regarded as purely physiological, and therefore of all their supernatural character. Theories, however, are still offered in the phenomena. Some phrase-hasten to find in dreams a power for views altogether derogatory to the science. Thus Dr. Brewster maintains that dreams cannot be conceived without the hypothesis of a plurality of organs. When only one organ is active, the dream is simple, but when several are in operation the dream becomes complex.

He believes that dreams often arise from causes which are not excited by external impressions, and cites in proof such as those of Dr. Ferriaroli and Fontaine, in which mental impressions were carried on. To this matter will recur in another place. Dr. Ferriaroli, the eminent physiologist, after long observation offers the satisfactory conclusion, that in dreaming the cerebrum is not inactive, "a train of thought be-coming active, frequently by sensations without, which is carried on without the controlling power of the mind; which is not corrected, or is only modified in a degree by knowledge acquired by previous experience."

The condition of health and the disposition exercise considerable influence upon the character of dreams.

Persons of sanguine temperament are more liable to dreams than those of a phlegmatic turn, although healthy animals are seldom so disturbed. Dreams never occur in sound sleep, but only when the rest is broken. During a dream the cerebrum is excited, and the dreamer, uncontrolled by the will, has the power to do as he pleases. We frequently see most beautiful conceptions of the grandest projects, or the most difficult problems: time and space are annihilated, so that during a few moments we live a lifetime of anguish or of joy. Dr. Abercrombie dreamed he had crossed the Atlantic and spent a year in America; on embarking to return he fell into the water, which so terrified him that he awoke and found he had not slept ten minutes.

In many cases, as remarked by Dr.

Carpenter, dreams are caused by sensations from without. Under these circumstances the character of the dream does not in all respects correspond to the exciting cause. Dugald Stewart states that Dr. Gregory, having applied a vessel of hot water to his feet, fell asleep and dreamed that he was walking up Mt. Etna. Dr. Abercrombie gives an account of a young English officer, so easily influenced by external sensations during sleep, that his companions frequently amused themselves at his expense.

Dreams frequently arise from continued activity of the cerebrum, or "thinking-brain." It is well known that, after awakening from a sound sleep, the first subject presented to our mind is that of which we last thought before "losing our senses."

Why, then, may we not assume that, in broken sleep, where the cerebrum is in irregular operation, the subject may be brought up and even clearly discussed? Cases illustrative of this hypothesis are frequent enough, and often are of so strange a character as to be deemed almost supernatural. On one night, during the early days of Pennsylvania history, an ancestor of the writer, an old man far past three score and ten, dreamed that hostile Indians were approaching the settlement. He awoke, but took no notice of it. But the dream was twice repeated, and therefore took such a hold on his imagination, that he aroused the family and, after much persuasion, induced them to fly to a neighboring settlement. By morning the fugitives had reached an elevated plot, from which they looked back and discovered to their horror that the whole settlement, which they had just left, was in flames. This dream, of course, was regarded as a supernatural warning, more especially because no others of the settlers survived. When Newark-upon-Trent was bombarded, one Alderman Clay dreamed that he was warned to move, as his house would certainly be destroyed. He obeyed the warning and removed his family to a place of safety. His house was burned a few days afterward. Both these dreams were remarkable because of their fulfillment. In each case, however, the event foreshadowed in the dream was at any time liable

to happen, and also under the circumstances each person was liable to dream precisely the dream recorded. Doubtless each had frequently before dreamed a similar dream, as the subject was uppermost in his mind. Some circumstances may have intensified the dread of danger at the time especially referred to, which rendered the dreamer more liable to be overcome by superstitious fears. Dreams of like nature, but more simple, are recorded of Condorcet and Franklin. The former states that frequently, while employed in mathematical calculations, he was compelled to retire, leaving his work unfinished. In his dreams the remaining processes and the conclusions of his calculations frequently presented themselves. Franklin frequently solved intricate problems of policy in his sleep, while Coleridge composed one of his most beautiful fragments in a dream. The phenomena of these dreams are easily explained by our hypothesis, and it is not necessary, as Dr. Gall arbitrarily remarks, to admit a plurality of organs, for it is clearly evident, that in every case the dream was caused by previous intense application of the brain to the particular subject. Nevertheless, with wonderful assumption, the phrenologist boldly asserts that here exists a powerful proof of his theory. Sometimes dreams occur, in which matters long forgotten are brought up and clearly presented to the mind. These, we think, aid in proving our hypothesis, since they show that in a dream the cerebrum, being removed from the multitude of conflicting subjects presented during wakefulness, may work with considerable exactness. A remarkable instance of this kind is given by Dr. Binns. A man, during the investigation of a murder committed in the north of Scotland, came forward voluntarily and swore that he had had a dream, in which was represented to him the spot where the pack of the murdered man, a pedlar, was to be found. Search was made, and the pack was discovered. The dreamer was arrested on suspicion of guilt; but on conviction of the real murderer he was acquitted, and the manner in which his dream was explained seems to be satisfactory. Subsequent to the murder, he and the murderer passed several days together

in a state of intoxication, during which time the fact and place of the murder were probably communicated to him. Many persons regarded the dream as a direct interference of Providence for the detection of the murderer; but Dr. Binns thinks Providence would have done much better by exciting the dream beforehand, so as to prevent the murder, and thereby to preserve two lives.

But by far the strangest class of dreams, which have always defied the ingenuity of man and, as yet, remain unexplained, are those in which some strong mental emotion or propensity is imbodyed. In these there is a regularity of occurrence, or seeming reality, a lack of confusion found in no others; and these are the ones which, in all ages, even our own, have excited the fears and superstitions of our race. The strange fulfilment of many of these renders them utterly inexplicable in the present state of physiology, though, doubtless before many years have passed, they too will have been completely divested of all supernatural attributes and be as simple as those already discussed.

A strange dream occurred to an acquaintance of the writer. The gentleman was, at the time, at Pike's Peak, where he followed the professions of mining and undertaking. He dreamed that, as he went to his mine, he met the devil. He was alarmed, and anxiously inquired whether he was the object of this visit. The devil replied, "No;" but that he had come for such-a-one, living some distance below. Having transacted his business and returned, the dreamer again met Satan, who informed him that he had obtained the object of his errand, and then disappeared, leaving the dreamer to awake in an unpleasant state of mind. Early in the morning, our acquaintance received an order to provide a coffin for the person mentioned in the dream. Upon examination, it appeared that the latter had died between twelve and one o'clock, about the time of the dream. The strangest part of the story is, that the person who died was taken suddenly and unexpectedly ill, so that the matter could not have been previously on the mind of the dreamer. The gentleman who narrates the dream is so worthy of

credit, that we place full reliance upon his statement.

Double dreams, or those dreamed by two persons at once, are not of frequent occurrence. Some of these, of a very curious character, are recorded. Mrs. Matthews, in the Memoirs of her husband, the great actor, relates that he had gone to bed, late at night, after performing at the theatre, and was unable to sleep. He had no light and, after tossing about for some time, fancied that he heard a rustling; turning around, he saw his first wife, long dead, standing by the bedside dressed as she was in life. She smiled and bent forward to take his hand, when he sprang from the bed upon the floor, where he was afterward found in a fit. At the same time, and at a very remote distance, Mrs. Matthews had a dream of precisely the same kind, which affected her in the same manner, throwing her into a convulsion. A dream of this character is mentioned by Dr. Binns as having been

preserved by St. Austin. "One Præstantius, desired the solution of a doubt of a philosopher who refused to give it to him. The night following, Præstantius, being awake (or rather supposing himself awake), saw this philosopher stand by and solve the doubt and presently go away. Præstantius meeting him the next day, asked him why, having refused to solve the question the day before, he came at midnight of his own accord and solved it? The philosopher replied, I came not truly, but in *my* dream I seemed to do this to you."

There is a strange analogy between mania and dreams: each is characterized by incoherency of ideas. It appears that the mind being uncontrolled by volition, changes the current of thoughts under the influence of the very slightest circumstances. Frequently two trains of thought occur at once, causing the greatest confusion, and producing symptoms resembling those of mania.

AN OUTCAST RACE.

[The following extract, from a lecture delivered at a late meeting of the Ethnological Society (London) by W. Martin Wood, Esq., gives an interesting illustration of the decay of races, and tends to confirm one of the leading theories respecting the disappearance of the ancient dominant races of America.—Ed.]

AN outcast race yet lingers in the island of Yesso, the most northern portion of the empire of Japan. These aborigines are named "Ainos," or "Mosinos"—the "all-hairy people"—this last being a Japanese term which marks their chief physical peculiarity. Their number is estimated at about 50,000. Yesso is only separated from Nippon by the narrow Strait of Tsougar; but the climate of the island is unpropitious, and its soil is barren, so that the Japanese have only occupied the southern portion. They number about 100,000, and dwell principally in the cities of Mats-mai and Hakodadi. The former city is the residence of the feudatory prince, who holds Yesso under fealty to the Tycoon of Yeddo. To this prince of Mats-mai the Ainos send a deputation every

spring, who present a tribute of dried fish and furs, and do homage, and repeat a formal convention expressive of submission to the Japanese. The Ainos live quite in the interior of the island, and seldom show themselves at Hakodadi or Mats-mai, except when on their embassy in spring or autumn, when they come to exchange their dried fish and furs for rice and hunting-gear. Of a timid and shrinking attitude, these people seem utterly crushed in spirit by their long subjection and isolation. They are short in stature, of thickest figure, and clumsy in their movements. Their physical strength is considerable, but besides that peculiarity, there would seem to be nothing by which an observer can recognize the possibility of the Ainos ever having possessed any martial prowess. The uncouthness and wildness of their aspect is calculated at first to strike a stranger with dismay and repugnance. Esau himself could not have been a more hairy man than are these Ainos. The hair of their heads forms an enormous bunch, and it is thick and matted. Their beards are very

thick and long, and the greater part of their face is covered with hair, which is generally dark in color; but they have prominent foreheads and mild, dark eyes, which somewhat relieve the savage aspect of their visage. Their hands and arms, and, indeed, the greater part of their bodies, are covered with abnormal profusion of hair. The natural color of their skin is somewhat paler than that of the Japanese, but it is bronzed by their constant exposure. The women of the Ainos, as if by default of the extraordinary endowments of their spouses, have a custom of staining their faces with dark blue for a considerable space around their mouths. The children they generally carry in a very singular fashion over their shoulders, and during a journey these tender charges are placed in a net and slung over the backs of their mothers. The children are lively and intelligent when little, but soon acquire the downcast aspect of their elders. Yet these strange people have a history, and though its details are lost, they cherish the remembrance that their forefathers were once the equals, if not the masters, of the Japanese. This is supposed to have been in the sixth century before Christ, at a period coeval with the reign of the first Mikado of Japan. The Ainos were then masters of the northern provinces of Nippon; but they appear to have become dispossessed of their land by the Japanese, and then were gradually driven across the Strait of Tsongar into Yesso. Their final subjugation was not accomplished until the close of the 14th century, when they were completely overcome by a Japanese

general, and compelled to render tribute at Yeddo. As to the origin of the Ainos we believe the whole college of ethnologists are at fault. Geographically considered, Yesso would seem to belong more to the Kurile Island than to Japan; the short stature of the Ainos, together with their ordinary method of hunting fishing, remind one of the Kamtschatkans. Yet those tribes have none of that superabundance of hair which, being so striking a peculiarity of the Ainos, would be anticipated in to some noticeable degree any race having affinity to them. The chief objection to a northern origin for the Ainos is that they persist in cherishing the tradition that their ancestors came from the west; that is, from some place in the direction of the Asiatic continent. Yet no tribe now found in Corea or Manchuria bears any resemblance to the Ainos. The interior of at least all the borders of Tartary, Siberia, have been explored by M. Mr. Fleming, or Mr. Atkinson, and as no hairy people have been found, the language of this outcast race affords no clue to their origin, for there seems no known tongue, certainly none of East Asia, which has affinity to theirs. They have no written characters, but have their rude bards or sagas, who, in verbally transmitted, have kept alive the memory of their ancient heroes, and their exploits on mountain and flood. The world will not quite lose these wild stories for a French missionary, the Abbé Neri, is preparing a translation of them, which will soon be published.

LIBERALITY TO SCHOOLS.

IN spite of the devastating influences of a great civil war, there is being developed a remarkable liberality of individuals towards educational institutions. In the year 1864, upwards of a million of dollars was given to our leading colleges; while, doubtless, half as much more was presented to the smaller or less known colleges and schools. Mr. Cornell, of Ithaca, N. Y., has

begun this year in a manner auspicious to education, by offering to the State a hundred thousand dollars to endow a university at Ithaca, requiring the government to give in addition only the land fund apportioned by Congress for the endowment of agricultural colleges. The offer has been accepted. By this act the People's College at Havana, N. Y., is

prived of its greatest support. This, however, is not unjust, since the citizens failed to fulfil their promises.

Harvard University has been the recipient of many noble gifts. Very recently James Lawrence, Esq., gave \$50,000 toward the support of the Lawrence Scientific School; \$21,000 have been paid toward the erection of an alumni hall; \$70,000 have been handed over for the support of sixteen scholarships, to be known as the Bowditch Scholarships; and other donations have been handed in amounting to about \$10,000. It is now the intention of the overseers to establish a theological school in connection with the university, thus completing the institution.

Throughout the whole country the same liberal spirit is manifested. Hamilton College has just received \$8,000 from one of her late graduates. The alumni of the University of New York have undertaken to endow a professorship with \$40,000.

The University of Chicago has just received a noble telescope of 28 feet focal distance, costing nearly \$20,000, from Mr. W. S. Gurnee, formerly of Chicago, but now of New York.

These gifts do honor to the American people, showing, as they do, that even in the midst of civil dissensions, educational interests are not forgotten. They are necessary, since immediately upon the close of the war, a stagnation of business may follow, which might endanger the existence of many colleges, if dependent upon the precarious support of students. Another advantage will, in all probability, accrue from these numerous endowments. Men of undoubted talent, with great love of teaching, and who would honor the profession, have hesitated to enter upon it as a life-pursuit, and have turned aside to law, medicine, or theology. The fear of starvation will soon be removed, and teachers will be abler men hereafter.

LOSSES TO SCIENCE IN 1864.

THE year 1864 was more marked by death in the scientific world than any previous year of this century. In January, Heinrich Rose died at Berlin, aged 64 years. In 1822, he became professor of chemistry at Berlin, which position he retained until his death. He was the friend and pupil of Berzelius and Klaproth, so that he was a link between the early and the more advanced schools of chemistry. His discoveries were very numerous, and his works on analytical chemistry opened up a new era in that branch of science. In the same month Dr. Edward Hitchcock died. For a long time he had been professor of geology in Amherst College, and was the State geologist of Massachusetts. He will be especially remembered on account of his investigations concerning the fossil foot-prints in the sandstone of the Connecticut valley. He also wrote a number of elementary scientific works, which attained a great popularity.

Dr. Benj. F. Bache died in Philadelphia, in March. He was a descendant of Benja-

min Franklin, and had been for many years professor of chemistry of Jefferson Medical College. He was associated with Dr. Wood in compiling the United States Dispensatory, and had always taken a lead in all reforms pertaining to pharmacy. He was an able, scientific man, but made few such discoveries as would insure posthumous fame. In April, Evan C. Pugh, F. C. S., one of the ablest and most promising scientific men of America, died at the age of 36. At 19 he was a blacksmith's apprentice, but bought out the rest of his time, and supported himself for a year at a seminary in New York State. After teaching a private school for two years, he went to Europe, where he studied four years gaining the degree of Doctor of Philosophy, at Gottingen. He then associated himself with J. B. Lawes, the British agriculturist, in whose laboratory he solved the question of the assimilability of nitrogen by plants, and demonstrated that Boussingault was right and the French Academy wrong. During the last five

years of his life he was president of the Pennsylvania Agricultural College, and, as the institution was new and scarcely on a fair basis, he devoted his whole time to its interests. His death was a great loss to American science.

In May, the eminent comparative anatomist, Randolph Wagner, died at Gottingen at the age of 59. In 1838 he became professor of zoology at Erlangen; and in 1840, professor of comparative anatomy at Gottingen. He published many valuable tracts on zoology, and contributed largely to the *Handwörterbuch der Physiologie*, of which he was the editor, and also to various scientific periodicals. In September, Capt. John Hanning Speke, the African explorer, died at Bath, by the accidental discharge of a gun in his own hands. It does appear strange that he and Bruce thus died by accident, after surviving all the perils of Africa. It will be remembered that the latter was killed by falling down a staircase as he stepped forward to assist a lady.

In November, Dr. Silliman, the father of American science, died at the age of 85. Though as an investigator he did but little, yet his determination and successful efforts to bring science prominently before the public mind, will cause him to be gratefully remembered. He was graduated at Yale College in 1796, and, in 1804, was there appointed professor of Chemistry and Natural History, which position he held until

1853, when, at his own request, he was released and appointed professor *emeritus*. In 1818, he established the *Journal of Science*, which he maintained at his risk, although at times it was a burden and never rendered any pecuniary return. He was a man of simple tastes, and attained his advanced age with mind and body in full activity. In the same month, Wilhelm Struve, astronomer royal of Russia, died at Pulkowa, aged 71. His labors and discoveries at the age of 23, rendered the name of Dorpat so illustrious, that the emperor opened to him a wider field of usefulness by founding the Pulkowa Observatory and placing him in charge. By his influence, this observatory has become the scientific authority for all the geographical work done in Russia. Shortly before the death of Struve, his son Otto, had been appointed to succeed him.

In December, Dr. H. R. Schoolcraft, the distinguished investigator of Indian habits and customs, died at Washington in the 72d year of his age. About the same time Professor Boole, of Queen's College, Cork, Ireland, died. He was one of the most eminent mathematicians of Europe; and published a large number of extremely valuable papers and treatises, for which he obtained a royal gold medal from the Royal Society of England. He was a man of extreme simplicity of habits, and undertook his labors merely through love of science and not from any desire for honor.

PRUDENTIAL ALGEBRA.

A MOST curious expedient was Franklin's moral or prudential algebra, as he called it. When asked by Dr. Priestly how he made up his mind when numerous strong arguments were presented for both of two proposed lines of conduct, he replied:

"My way is, to divide half a sheet of paper by a line into two columns; writing over the one *pro*, and over the other *con*; then during three or four days' consideration, I put down under the different heads short hints of the different motives that at different times occur to me, *for* or *against* the measure. When I have thus got them all together in one view, I endeavor to

estimate their respective weights; and when I find two (one on each side) that seem equal, I strike them both out. If I find a reason *pro* equal to some *two* reasons *con*, I strike out the *three*. If I judge some *two* reasons *con* equal to some *three* reasons *pro*, I strike out the *five*; and thus proceeding, I find at length where the *balance* lies; and if, after a day or two of farther consideration, nothing new that is of importance occurs on either side, I come to a determination accordingly." He added, that he had derived great help from equations of this kind; which, at least, rendered him *less* liable to take rash steps."

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MAY, 1865.

HURRY.

FOREIGN visitors speak of the quick movements and the thin, sharp faces of American bankers and financiers. But the reckless haste which perhaps characterizes us as a people, is seen in our educational as well as our financial circles. In the latter we mark some good and some evil results, but these we do not propose to discuss. In the process of mental training, to vary an old proverb,—if hurry comes in at the door, knowledge goes out of the window. Most minds develop slowly, if they develop well. A genius like Pascal, who can work out Euclid at the age of eleven, and write on Conic Sections at sixteen, is found only here and there. From the age of six years to that of sixteen, an ordinary mind needs all the time commonly given to study, to grasp firmly the elements of the different branches of knowledge taught in our schools. Three years longer are surely needed to acquire proficiency in the use of those elements. And then the College or University should teach the scholar the higher paths of learning, and send him forth, not indeed finished, but perfectly furnished, by constant practice of his powers, to take his stand among those who can benefit the world by literary labor. In this way a nation is advanced in the ranks of letters by the ability of her scholars.

But what is the course too often pursued? At six, the child goes to school,

"With his satchel,
And shining morning face, creeping like snail,
Unwillingly;"

at twelve he "prepares for College;" at fourteen, he enters the University, at eighteen, he takes his profession, and at twenty-one takes charge of our souls, our bodies,

and our quarrels. The last seven years are surely the most important of all, but for three of these, the mind of "Young America" must be devoted to the chosen profession, so that four years only are, in fact, given for much development. We contend that the fruit of this hurry is to lower the grade of general scholarship. We see one out of twenty distinguished for literary attainments, while in England and Germany a much greater proportion is found. And the difficulty can be remedied only by allowing a longer period for the preparatory training, and by elevating the entrance-requirements of College and University to correspond. With some six or seven exceptions, our colleges graduate men who stand exactly on a level with the graduates of Eton and Rugby. Instead of the literary training for four or five years which the English boy then gains at Cambridge or Oxford, our boys plunge into the law or medical school. No one can deny that this condition of things lowers our grade in the ranks of scholars. The facility with which our learned professions are gained crowds them full. Lawyers without a brief, physicians without patients, clergymen without charges,—the land is full of them. We believe that but for the peculiar circumstances of our land,—its wondrous growth and constant change, this surplus of professional men would be more apparent here than in any other country.

Few realize the value of the years between fifteen and twenty-five, for preparation. It is true the "smart boy" may do great things in his profession at the age of twenty-one, but he never can leave the mark he might have made if he had waited. He never can go into those deeper channels of thought, where lie the pearls which will bear a value forever. The mind must have a longer training than we now give it. Money may be made quickly, while the flow of petroleum continues, but literary attainments have not, cannot be gained, without the "midnight oil." Now and then a Minerva comes into the literary world, fully armed from birth. But those

who are of more human mold must wait to brace their armor on, to learn the use of sword and shield, to study the ways of war. Thus the good soldier is formed, and thus the good scholar. Erasmus again and again wished that students would keep in mind a single motto, "*Festina lente.*" We must heed such advice now in this racing age, or lamentable epitaphs will have to be graven on many stones, for the future to ponder, where otherwise might be inscribed, "*Hic jacet, an American scholar.*" For, though it is not described in medical dictionaries, this morbid activity, "*Hurry,*" is with Americans a chronic disease, and its victims in scholastic walks are innumerable.

PAPER FROM FLAX.

THE elixir of life was never more earnestly sought, or, certainly, never with more scientific assiduity, than has been an adequate source of supply from which material for the manufacture of paper could be economically drawn. In the various processes of investigation, the vegetable kingdom has felt the tread of nomadic feet in every province. Woody fiber and everything having its semblance have been placed on the rack of inquisition bruised by the pestle of experiment, dissected under the microscope, and, in mangled fragments, made to show their capacity to appease the cravings induced by the march of improvement. For a long period, however, the most economical and most readily obtainable supply has been the worn out, cast off, tattered garments, the strings and patches, clippings and shreds, brought together by the searchings and savings and pilferings of those who in diverse capacities thus fed the paper-mill. In this work, Italian lazaroni, French chiffonniers, and American ragpickers, have long had an important share. Hence, in the fabrication of the most delicate sheets that grace the *escritoir*, the initial process has been the removal of the dirt, the filth, the miasma, and the germs of pestilence

with which the staple material was impregnated,—the purification being effected through means which sensibly impaired the health and to some extent shortened the lives of the operatives most immediately engaged in the process.

Linen, or flax, has always been a desirable textile since the manufacture of paper became an art. The handsome, smooth, firm leaves of antique tomes, coming down from the first era of typography, owe half their beauty to the fact that linen was then the manufacturer's "raw material." The use of cotton, at a later period, was merely a matter of economy, when Whitney's invention, the cotton-gin, afforded an inferior but cheaper substitute. The use of flax which had not undergone manufacture and bleaching, in the form of linen, has been repeatedly essayed, but adequate means of separating the proper fiber from the woody matter seemed unattainable. A spotted, tawney, coarse fabric was for a long time the only product secured.

The prospect of an abundant, unexceptionable source of supply for the manufacturer of paper has at last, however, been found,—in the rejected flax fiber. A dresser or brake, recently invented, designed to prepare flax for general uses, was found to detach a greater proportion of woody particles than any brake had before removed, and to make the true fiber valuable to the paper-maker. Further improvements were soon effected, having the preparation of flax for the paper-mills as an especial object. The inventors now state unequivocally, that, by their perfected dresser and a complication in which these brakes are used, all obnoxious matter is thoroughly removed from the flax fiber, and a pulp can be made from it free from color and uniform in quality and general characteristics, so that the finished paper, far superior to that produced from ordinary materials, can be put in market at less than usual cost. On examining this new brake we brought away some of the flax which had been subjected to its operation, and subsequently compared it with

some obtained from the ordinary brakes. The latter, on reducing it to a condition similar to paper-pulp, was a coarse, yellow-spotted substance; the former was of fine, even texture, white and spotless. It is not improbable that the results anticipated by the inventors will be realized. This application of flax is certainly desirable. The annual importations of paper material amount to nearly eighteen millions of dollars. Our Western States are capable of producing flax in an abundance that would

fully supply the demand. Its extensive cultivation on the prairies has been hitherto for the sake of securing only the seed. The straw has been cast away, there being no means of utilizing its valuable fiber without transporting the gross bulk at a cost which made the trouble unremunerative. In the effort to practically and advantageously employ flax as a staple in the manufacture of paper, a great advance towards consummation has evidently been effected.

EDITORIAL CORRESPONDENCE.

CHESTER, Vt., April 13, 1865.

Waste of Letters.—*Cicero's Reporters.*—*Pitman's Shorthand.*—*Phonographic Principles.*—*Their Applications.*—*Phonography in Schools.*

YOUR editorial, Mr. Editor, on "Waste of Letters," and the letter called forth by that article in February, are the expression of a demand for a brief system of writing which must and will be met.

The cultivation of the vast grain-fields of the West, together with the facilities for the disposal of their product afforded by railroad and telegraph and the ocean steamships, demanded something better than the sickle and the cradle: the "reaper" answered the demand. The exigencies of the present war required the means of storming earthworks from the sea or river, and the "Monitor" appeared. Neither is an improvement upon former methods. The reaper is not a cradle worked by horse-power, but a set of pairs of shears. The Monitor is not a ship in armor. So the telegraph is not a modification of the wind-mill, or a system of pennons, but an original conception, differing in everything—save in the object to be accomplished,—from the bungling contrivances of former days.

Now all these means of progress have multiplied the efficiency of civilized men a million fold. It is estimated that the labor of one hundred millions of men is performed by machinery in Massachusetts, in a single year. The economy of time in one department demands the economy of time in another; and this economy in relation to an employment which is more intimately connected with these and similar improvements than any other, must inevitably come. Now, my question is,

does the view suggested in the two articles referred to, look for this improvement in the right direction; or does all analogy point another way?

Your correspondent makes a suggestion which occurred to a freedman of Cicero nearly two thousand years ago, who succeeded in reporting the speeches of the orator by using portions of the Roman letters, with the addition of certain arbitrary signs, and sharing the labor of reporting with several others, who were to divide among themselves sentences and parts of sentences, each having no concern for that which was assigned to the others, save only that his own fragments should come in at the proper places, when the different parts should be brought together to be transcribed. From that day to this there have been repeated attempts to carry to perfection the art of rapid writing, the element of rapidity being the main thing, and legibility secondary. It remained for Isaac Pitman, of England, to devise a system of shorthand which should be also legible, when the memory of the thought which it expressed should have passed away. And this, like most great improvements, was based upon a simple idea. Every mark shall be the expression of a sound. Every symbol shall be simply an abbreviation, which can be easily supplemented by additional strokes.

In the development of this idea he had the advantage of nearly two thousand years of past experience. The assigning of different sounds to the same stroke or dot, according to its position above or below the line of writing,—the use of suffixes and affixes, which take their phonetic character from their place at the beginning, or end of a word, and many similar expe-

dients, have been gathered from other systems; but they have been brought together with a harmony and beauty which makes his system hardly less a science than an art. For example, *t* is represented by a perpendicular line drawn with the ordinary stroke of the pen, *d* with a heavy stroke corresponding to the increased effort of the organs in its utterance. Again, it is noticed that the final *d* or *t* cuts off the sound which would otherwise have been prolonged. Thus a curve, indicating *n*, with the vowel long, and *e*, a mere dot, would spell knee: a curve of half the usual length of the letter with the same vowel would spell neat—a similar curve, half-length and thickened, would spell need: I say would spell these words for every sound in each is as really and fully indicated as in common print.

A number of the words used in common speech are so often repeated as to make up a large portion of any written page. These are represented by signs, which are, however, only abbreviations, no more arbitrary, many of them by no means as much so, as those at the end of the spelling book. With these the eye soon becomes as perfectly familiar as with the most common abbreviations in common print.

Compare now the brevity of the system with the ordinary style of writing: take *e. g.*, the word "commanding" requiring thirty-one distinct strokes of the pen, and one dot. It is written in phonography by one heavy curved stroke in the form of a crescent, with three dots, one before and one after, for "com" and "ing" and the other just above, indicating the vowel sound of the penultimate syllable.

The system in the corresponding style is perfectly legible, and is now used by thousands as a medium of correspondence. I am, myself, in common with multitudes of others, in the habit of reading sermons from the pulpit written entirely in the phonographic character. It is true that the system is somewhat difficult of acquisition. It cannot, from the nature of the case, be mastered as readily as common script, which is but a slight modification of forms with which the eye has become thoroughly familiar. But, with our present school facilities, why may it not be made a general study; or, at least, why should it not be made an essential part of the education of every man of business? If, from a business life of twenty-five years, at least one-fourth of the time devoted to writing could be saved for other business, would this not warrant the appropriation of a liberal number of weeks or even months, at the outset, to the acquisition of a system by which this saving is to be

accomplished? If the train is an hour behind-hand I may possibly lose no time by proceeding on foot to the next station; but if I am to go a hundred miles it will be better to wait half a day, than to trust to the ordinary method of conveyance.

I believe that phonography can be taught in our common schools, and that the discipline involved in its acquisition will itself repay the time and labor necessary to master it; that it ought, and that it eventually will become an essential part of every good business, and liberal education. The time spent in our academies and higher schools upon studies which are pursued solely as matters of discipline or accomplishment, is abundantly sufficient to secure the knowledge of this art, which while it is a most admirable means of training the memory, the ingenuity, and especially the power of attention, is in itself an accomplishment of incalculable value. C. C. T.

Boston, Mass., April 4, 1865.

*A Pedagogical Experience.—A Refractory Pupil,
—Teacher Indicted.—Restricted to Jail-Limits.*

MR. EDITOR,—The article on "Pedagogical Law," in your March number, reminds me of a circumstance that occurred in New England a few years ago.

I was in a commercial school in Hartford, in 1863. A young man applied for instruction in writing. After a little acquaintance I learned that his situation was slightly embarrassing. He was, in fact, on jail-limits, from inability to pay a judgment and the costs of a trial for the punishment of one of his pupils.

The facts he detailed as follows. He had taken a district school near Hartford. One of his pupils, a coarse brutal fellow, had interfered with the order of the school, until he found it necessary to punish him. The boy refused to take off his coat, and he tore it off. He then gave him a moderate correction with a whip. The teacher was indicted on the charge of assault and battery. For three years this trial had been carried on without final settlement.

This was the result. For faithfully defending the rights of a teacher this young man had been kept from his labors for three years. His means had been absorbed. His health had been shattered by anxiety. He had been disgraced and treated like a felon, at the instigation of a dolt. And not a teacher in this enlightened city had troubled himself to inquire into his case, or see that he had justice. Surely, I said, the days of barbarism have not yet passed.

I must leave these facts as he gave them to me. I could not doubt their truth. The

young man went to his friends in Massachusetts, and I do not know whether he has ever recovered from the effects of this malignant persecution. If teachers were true to themselves and to one another such things would seldom be attempted. I did not wonder that a bad man, the father of the pupil, should indulge his passions in this way; but I did wonder that a community of teachers could look upon such persecution without seeing that their own interests were involved. This teacher had been imprudent; but he had tried to do his duty,

and had really performed a praiseworthy act in enforcing discipline. What teacher has always been so prudent, in rude places, where there was no public sentiment to enforce discipline, as to be beyond criticism? Have boors all the rights, and teachers no license?

This subject deserves attention; and I for one, Mr. Editor, hope that you will carry out the design fully, and give us a digest of pedagogical law that will inform us of our *rights*, as well as our duties.

D. P. L.

NOTES AND QUERIES.

NOTES.

License to Teach English.—The original paper of which a verbatim transcript is here given, is filed among the papers in the office of the Secretary of State. C.

"The Governor's License granted unto John Shutte, for the teaching of the English Tongue at Albany."

"Whereas the teaching of the English Tongue is necessary in this Government; I have, therefore, thought fitt to give License to JOHN SHUTTE to bee the English schoolmaster at Albany: And upon condition that the said JOHN SHUTTE shall not demand any more wages from each Schollar than is given by the Dutch to their Dutch Schoolmasters. I have further granted to the said JOHN SHUTTE that hee shall bee the onely English Schoolmaster at Albany.

"Given under my hand, at Fort James in New York, the 12th day of October, 1665.

"RICH'D NICHOLS."

Fall.—The word *fall*, used instead of autumn, is generally considered as an Americanism, and inelegant. It is, however, in this sense, local in England, and was so used by William Penn in one of the earliest letters written by him in America. The word is as poetical and appropriate as "spring," is more expressive than "autumn," and should never have been thrust out of the Saxon seasons. S.

QUERIES.

Hedge Schools.—In English works I frequently see allusions to "hedge schools." Does this phrase have any specific meaning? Is the origin of it known?

F. HAZEN F.

[This term had its origin at the time when the Irish schoolmaster was regarded

by the British government as a felon,—to teach any Catholic, being a penal offence. To elude the officers of the law, and to facilitate escape in case of detection, the plan of meeting for instruction at the sides of hedges was frequently adopted. It soon became customary to bring a turf to make comfortable these subterranean institutions, which becoming somewhat systematically managed acquired the name of hedge schools. The term is now used in its original signification, and, occasionally, as a contemptuous appellation for a rural or inferior school.—Ed.]

On; Upon.—These words seem to be used indiscriminately by some writers. Is the practice justifiable?

SALTONSTALL.

[Custom tolerates such expressions as, "He fell *upon* the ground," "Send *down upon* our bishops," "Pour *upon* them the continual dew of Thy blessing." But the ancient form of "upon" was *uppan*, and denoted elevation. "On" may be used to imply either rest or elevation; "upon" should be employed only in expressing upward motion and elevation.—Ed.]

Further; Farther.—Which of these forms is correct? If both are correct which should be preferred?

SALTONSTALL.

["Furthest" should have preference. In Harrison's treatise on the English Language, authorities are cited showing that the word *fer* was formerly used in the sense of the modern term *far*, and that from *fer* was derived the superlative *ferrest*, and that the comparative would, if regularly formed be *ferrer*; *fer*, *ferrer*, *ferrest*. The word *further*, used by Chaucer, is a different word and derived from *forth*, a term still holding its place in the

English language, though formerly written *furth*. The word which now fluctuates between *further* and *farther* ought, therefore to be written *forther*. Custom makes it *further*. "*Fur* is a corruption of *fer*,

leading to other corruptions, *fort* *farthest*, in the place of *fer*, *ferrer*, now obsolete. To go *forth* implies ticular distance; to go *far* is so far that it excludes nearness."—Ed.]

EDUCATIONAL INTELLIGENCE.

WASHINGTON, D. C.—We are indebted to J. Ormond Wilson, Esq., for the twentieth Annual Report of the School Board of the city of Washington. This document contains one hundred and twenty-six pages, and is the most complete report of the kind which we have yet had the pleasure of seeing. The reports of Committees are really elaborate, well written papers upon the subjects discussed.

The Wallach School Building accommodating 600 pupils was completed during the past year. This structure is most creditable to the taste and skill of the "Special Committee." The house and grounds are not merely commodious and convenient; but they are made attractive to the eye, so as to allure and captivate at that period of life when pleasure is sought and keenly appreciated. The committee wisely remark that "we cannot lay too much stress upon the importance of making the surroundings of childhood such as are calculated to develop all the nobler faculties and emotions of our nature."

The aggregate number of pupils on the roll books is 4,895. The method of marking is plain, strict, and accurate, and rivals the best systems of our Eastern cities. Under the present intelligent and conscientious management the public schools of Washington cannot fail to attain a high position.

MAINE.—A Normal School was opened at Farmington the 24th of August last, with 30 students—in the autumn term 59, and in December, 35. The prospects of the school are most hopeful. A. P. Kelsey, Esq., is Principal.

KANSAS.—A Normal School is about to be opened at Emporia. Mr. L. B. Kellogg, a graduate of the Illinois University, and for two years the principal of the model school there, is to be Principal.

IOWA.—There are in this State, of children between 5 and 21 years, 294,912, of whom during the last year 210,569 attended school. There are 6,628 schools, and 8,955 teachers—males, 2,815, females 6,140. Average wages per week—males, \$6.28, females \$4.40. Paid teachers during the year, \$686,672.62. The results of the year are reported as highly satisfactory.

MASSACHUSETTS.—From the annual report of the Massachusetts State Board of Education it appears that the present number of schools is 4,765; scholars, 2 increase of the schools since last year of scholars, 3,263; average attendance, summer, 177,894; decrease, 2,668; 188,669; decrease, 372. The averages of male teachers was \$46.73 per females, \$19.37; amount raised for public schools, \$1,533,814.81; over last year, \$102,299.11. Voluntary contributions to prolong public schools for apparatus, \$37,259. The average expenditure for each scholar between ages of five and fifteen years, was \$31. The increase is an advance of \$31 beyond the largest annual appropriation ever made by the citizens of the State for public schools.

The number of persons attending State Normal Schools was 582.

ANDOVER SEMINARY.—The presentowment, and the wants of this Sem are thus stated by the treasurer:

The Seminary has at present an endowment fund safely invested and yielding interest amounting to.....	\$350,000
The public buildings, five professors' houses, lands, libraries, etc., are valued at.....	200,000
The library fund is.....	20,000
The beneficiary funds.....	60,000

Total amount of present endowment....	
The foundations of a new library building, and of a new chapel are laid, requiring....	50,000
For increase of salaries, of beneficiary fund, a sixth professor, lectureships, fellowships, and salary of librarian, there will be needed.....	120,000

Making a grand total of.....

VANCOUVER ISLAND.—The Legislative Committee on Education have presented report, of which the two essentials are the following: "That there should be established in this colony a system of schools, conducted by thoroughly trained teachers, wherein the intellectual, physical, and moral training be such as to make the schools at all classes of people;" "That in

munity such as this, where religious opinions are so diversified, and where the benefits of a well devised educational system should be extended to all, the reading of the Bible or the inculcation of religious dogmas in free schools would be unadvisable." The report has been discussed in the Assembly, and an expression of opinion given by the members, generally favorable to the view of the committee.

—Girard College, in Philadelphia, has five hundred and sixty three pupils, each

of whom costs one hundred and eighty dollars a year. In 1857 there were only two hundred and ninety-five pupils, and each then cost two hundred and fifty-two dollars. The number of applications is increasing, on account of orphanage produced by the war.

—The Regents of the Smithsonian Institution have decided to rebuild the portions of the building destroyed by fire, and to make them fire-proof, at a cost of \$120,000, which will be paid from the surplus fund of the institution.

CURRENT PUBLICATIONS.

NEARLY a year has elapsed since the appearance of the New Dictionary.¹ The diversity of opinion respecting it has had free expression. Some assert that it is no longer *Webster's Dictionary*; others say or insinuate that it is defective in its appeals to authorities, that it supplies the student with no means of tracing the history of a word, that the "authorities which are adduced seem to have been pitched upon by accident." We do not declare the work perfect in every detail, but we must confess our continual amazement at the fullness of its vocabulary, the clearness, precision, and comprehensiveness of its definitions. The great increase in the vocabulary of this monument to American learning may be shown in the facts that the first Dictionary, by Noah Webster, published in 1806, contained only 12,000 words; his great American Dictionary, published in 1828, nearly 80,000 words; the first Pictorial edition, issued in 1859, about 100,000 words; while this new illustrated edition contains more than 114,000 words, or ten thousand more than any other dictionary of the English language.

In the present thorough revision of this great work, under the general supervision of Professor Noah Porter, of Yale College, more than thirty eminent scholars have been employed, several of them during many years. Among them were those who have attained to great eminence in different departments of learning, both in America and in Europe. We speak of this revision as *thorough*, because we find that it has thousands of new words, and that many of the definitions of the old ones have been

carefully rewritten, retaining Webster's most valuable features, while the new significations which good present usage attaches to these words have been added, so that this work is emphatically the best defining dictionary of our language. The revision also extends to the etymology, orthography, and pronunciation, thus embracing an entire reconstruction of the whole work.

In respect both to orthography and pronunciation, its conformity to the usages of the best speakers and writers of America and England, renders it unequalled as a standard in these particulars.

Those valuable synonyms of Dr. Goodrich, which occupied some seventy pages before the vocabulary of the first Pictorial Edition, have been incorporated in the work, each under its appropriate word. Besides these, there have also been added ample lists of synonymous words, without explanations. There are more than *three thousand illustrations* to aid in communicating clear ideas to those objects which words alone cannot present. These are arranged in the body of the vocabulary, each with the word to be illustrated, and are also grouped together in classes at the end of the volume, with references to the pages where the descriptions may be found.

Among other new and valuable features, are the "Explanatory and Pronouncing Vocabulary of the Names of noted Persons and Places, and the Fictitious names of of Writers;" "The Etymological Vocabulary of Modern Geographical and Biographical Names;" "Common Christian Names, with their Equivalents in Several Languages;" "and a Brief History of the English Language," by Prof. James Hadley.

But, it may be asked by those who have not examined it, or by those who have not considered the real character of a complete

¹ WEBSTER'S UNABRIDGED DICTIONARY. New Illustrated edition. Thoroughly revised, and greatly enlarged and improved. By CHANCERY A. GOODRICH, D. D., LL. D., and NOAH PORTER, D. D. Royal quarto, 1860 pages. Published by G. & C. Merriam, Springfield, Mass. 1864. Price, \$10 00.

lexicon—What is the need of another dictionary? Let us consider the relations properly existing between a living language and the standard dictionary which represents the meaning of the words constituting the language.

The language of a people is the summary of the thoughts and judgments of their forefathers, and a repository of the civilization of the nation to which it belongs. Living languages are in process of continuous creation. They are daily molded, to express the thoughts of the times, hence are never finally completed. Dead languages are stationary, recording only the thoughts of the past stage of development in their respective nations. As long as a language remains a living one, and is daily used to symbolize the ideas of the people employing it, new words will be required for new ideas; and as some older words fall into disuse, and others materially change their significance by embracing new meanings, the language must be constantly undergoing changes. A dictionary which has been published twenty years without revision, cannot represent the language as it really exists. It may be a complete record as it was, but it is impossible to confine a language within the lids of a dictionary. A dictionary may contain words and definitions; but if those definitions do not embrace the ideas symbolized in the present use of the words, it cannot truly be called a dictionary of the living language, nor can it be of much value, except as a record of the ideas of the past.

Great generalized ideas have recently been symbolized in our language; and they are becoming incorporated into the legislation of our nation. The spirit of progress in our country, our people, and our language, demanded an American dictionary which, in addition to all the accumulated treasures of the past, should represent the living, current ideas of to-day. Such a work we now possess in Webster's New Illustrated Dictionary—a fit cotemporary with the dawn of our new national life.

John Milton, the blind bard, was not a churchman nor a royalist. He opposed prelacy and episcopal prerogatives; he had no sympathy for dynasties and regal powers. But the stoutest defenders alike of Church and State have acknowledged his sway, and one would not be accused of extravagance of expression in saying that his writings will be read as long as the Bible finds readers, or monarchy retains its crown. To the unquestioning belief in his poetic inspiration which is everywhere manifested, we, however, can not devoutly yield without a few

slightly heretical reservations. Many persons obtain their literary *credo* as to that of their religion and politics—from parents and schoolmasters; they adopt their poetical principles as they do their homesteads and walking-sticks—by literary descent. Spencer, Shakspeare, Pope, even the modern Byron, are spoken of with enthusiasm by those who know scarcely anything of their works. Their works are not invulnerable. There are many loopholes and many weak points accessible to the shafts of criticism. Mrs. Norton, with good reason, has with her own pen sent forth the name of Milton as an echo among the ages, and many now know the name only because they have heard these reverberations,—not because they often hear and are enraptured by utterances of the deep-voiced bard himself, who, sightless and solitary in his lonely circuit, could unaided scale the heights of Parnassus, and, while pointing north to primeval light, commune with the gods of a boundless realm. Henceforth, who are not familiar with Milton, can be without excuse. No edition of his works possesses a combination of so many admirable features as are shown in this unique volume* of Charles Dexter Cleveland. It has attractions for the student, the poetical, and the most critical reader. A fine specimen of handsome and correct typography, it invites perusal. Together with explicatory remarks, critical notices, and similar matter, it encloses the most indolent. For the student and critical reader it has especial interest in that it has no traces of the haste, carelessness, and lack of taste, judgment, and search which characterize so many of the "compilations," "editions of the works," and the like, numerous in every language, and, it might be said, on every tabular statement. It is a scholarly work, the result of long and labor, prosecuted to completion. We have heard of Professor Cleveland only as a student who had been a successful teacher, and was as successfully engaged in literary labor; but in this volume is given us an auto-photograph which enables us to see his moral and intellectual features. There is observable not only a correctness of judgment in deciding several points of his own annotations, or in selecting quotations of others, there is not only a burr in his work, which could come from the hand of a skillful workman.

(*) THE PORTFOLIO WORKS OF JOHN MILTON, with the Author's Preliminary Dissertations on each of his Works; Critical and Explanatory; an Index to the Works of Paradise Lost; and a Verbal Index to all the Works of Milton. By CHARLES DEXTER CLEVELAND, Author of "Pendulum of English, American, and Classical Literature." Philadelphia: Frederick Leypoldt. Large 12mo. Price \$3.

there is also an evident spirit of integrity, a conscientious painstaking, and a devotion to his task which in this age of bookmaking must be equally rare and gratifying.

We take pleasure in welcoming a practical work on philology. Prof. Marsh's little volume³ should be introduced into every school, in which pretension is made to thorough drill and scholarship. The system laid down is simple and admirable. The pupil is required to write an essay on some author according to a plan given in the book. A series of questions is given; and the student if he would write intelligibly, is compelled to investigate the whole subject very thoroughly. In this way not merely is his power of composition strengthened, but his store of useful information is very greatly increased. We heartily agree with Prof. Marsh, when he says that the habit of investigating and writing out results, quickens thought ninety-nine times as much as beating the brain for original brilliancies.

A new edition of Prof. Mitchell's early lectures⁴ on the planetary and stellar worlds has been published. To praise any of this author's works would truly be a work of supererogation. The beautifully simple style of his writings renders them interesting to all; and, if any desire a royal road to an elementary knowledge of astronomy, we recommend for perusal a set of General Mitchell's works. To this man, who elevated himself from the lowest position in life to that of an honored man in science, astronomy owes much of its success in this country. The preface to these lectures gives an interesting account of the disheartening difficulties encountered and overcome by him, while endeavoring to establish the Cincinnati Observatory.

A writer who is too modest to give his name, has undertaken to teach us what is right and wrong, in a little book⁵ of seventy pages, to which is added about a score of pages of simple and long drawn out questions. The table of "Contents" is immense—five pages. Some of our duties, however, are clearly set forth, and the book may be used with profit by many teachers and heads of families.

Of making text-books there is no end. Every instructor thinks he perceives the

defects of every other teacher and so inflicts a new book upon the too patient public. Arithmetics and grammars are generally the results of this delusion, and consequently they are innumerable. We are troubled when a new one appears. However, there is always room for a good book. Mr. Silber has given us a very good little volume,⁶ just the thing for beginners. It is carefully compiled; not so concise as to be repulsive, nor so detailed as to be heavy. We recommend it to the attention of teachers, although we cannot entirely approve of the pronunciation offered in the work.

To aid in making teachers and pupils perfectly familiar with the Constitution of the United States of America, with all of the recent amendments, it has just been published in a neat, convenient little volume. The Declaration of Independence is also given in full. The book is well bound in cloth, and can be carried in the pocket. The price is so low that no one can have excuse for being without it.

Everything tending to beautify the school-room is profitable to pupils and teachers. Sherwood's School Mottoes⁷ for this reason are valuable, and should appear on the walls of the school-room. They consist of fifteen sheets, on which are printed in large bold letters (which can be read, when fastened upon the walls, from every part of the room) such mottoes as "I am Early;" "I will Try;" "Dare to do Right;" "Study first, Play afterward;" "Good Scholars must be Thorough in Every thing;" "Every day in your Life is a Leaf in your History;" "A fault Confessed is half Redressed;" with many other appropriate mottoes.

While text-books in general have greatly multiplied of late years, Physiologies have not increased proportionately. There is now room for a new and popular school-book on Physiology, adapted to the common schools. Children cannot be taught too early how "fearfully and wonderfully" they are made; they cannot too early become familiar with the great principles of life and health. We have just had the privilege of examining some early sheets of a Physiology now in preparation, and to be ready next month. Dr. Lambert is well

(3) METHOD OF PHILOLOGICAL STUDY OF THE ENGLISH LANGUAGE. By FRANCIS A. MARSH, Professor, etc., in Lafayette College. Harper & Brothers. 12mo, pp. 118. Price, \$1.50.

(4) THE PLANETARY AND STELLAR WORLDS. A popular exposition of the great discoveries and theories of modern astronomy. In a series of ten lectures. By O. M. MITCHELL, A. M., Director of the Cincinnati Observatory. N. Y.: Charles Scribner. 12mo, pp. 326. Price, \$1.75.

(5) LESSONS ON THE SUBJECT OF RIGHT AND WRONG, for use in Families and Schools. Boston: Crosby & Alsworth. New York: Oliver B. Felt. Price, 75 cents.

(6) PROGRESSIVE LESSONS IN GREEK, together with notes, and frequent references to the grammars of Sophocles, Hadley & Crosby. Also, a Vocabulary and Epitome of Greek Grammar for the use of beginners. By WM. H. SILBER, A. M., New York Free Academy. Appleton & Co. Pp. 79. 12mo. Price, \$1.00.

(7) CONSTITUTION OF THE UNITED STATES, with all the Amendments. Also, the Declaration of Independence. N. Y.: Schermerhorn, Bancroft, & Co. 24mo. Price, 25 c.

(8) SCHOOL MOTTOES FOR THE SCHOOL-ROOM WALLS. New York and Philadelphia: Schermerhorn, Bancroft & Co. Price, by mail, 75 cents.

qualified to make a good book on this subject. He has been long and practically identified with educational affairs, in lecturing to schools on Physiology, his favorite study. The publishers are illustrating the work* in a liberal manner, and it surely promises speedily to take a high position among the first-class school books of the age.

SILLIMAN'S JOURNAL for March contains a continuation of Prof. Heinrich's "Planetology;" Terrestrial Magnetism, by P. E. Chase; the first part of a paper on the Chemistry of Natural Waters, by T. Sterry Hunt; a memoir on Shooting Stars, by H. A. Newton; Remarks on the Carboniferous and Cretaceous Rocks of E. Kansas and Nebraska, by F. B. Meek; together with various other papers and the invaluable summary of scientific news. As this magazine is the acknowledged exponent of American science no honest instructor can

well do without it. It is published Haven, Conn., at \$5 per annum.

BARNARD'S AMERICAN JOURNAL OF EDUCATION, for the quarter ending Mar appears late. It is well worthy of reading. Its frontispiece is a portrait of Samuel P. Bates, the worthy and Deputy State Superintendent of Pennsylvania. Its leading articles are: The American Doctrine of Public Education; Naval Education in the United States; Competitive Examinations for Admission to our National Schools; National and Scientific Convention in 1881; Schools in England; Public or Grammar Schools of England; The Development of American English Teachers and Educators; Pedagogy; National Teachers' Association in 1884; English Grammar; Librarian; College Professorships and Logics; National Bureau of Educational Statistics; Associations for Educational Purposes; Object Teaching. Quarterly \$4 per annum, or \$1 each.

♾ PHYSIOLOGY FOR SCHOOLS. By Dr. LAMBERT. New York: William Wood & Co., Publishers.

MISCELLANY.

—Henry the Fifth was a learned prince, but he had the bad habit of borrowing books and never returning them. After his death a petition was sent to the Regency by the Lady Westmoreland, his relative, praying that her *Chronicles of Jerusalem* and the *Expedition of Godfrey of Boulogne*, borrowed of her by the late king, might be returned. The prior of Christ Church likewise, in a most pitiful complaint, said that he had lent to his dear lord, king Henry, the works of St. Gregory, who had never restored them to him, their rightful owner.

—Japan is a country of paradoxes and anomalies. They write from top to bottom, from right to left, in perpendicular instead of horizontal lines. Their books begin where ours end. Their locks turn from left to right. Their day is our night. Shops go to customers. People sit upon their heels. Horses' heads are where their tails would be in an English stable, facing the entrance, the food hung from the roof in a basket. There old men fly kites, while the children gravely look on; the carpenter uses his plane by drawing it to him; their tailors stitch from them; they mount their horses from the off side; the bells to their harness are always attached to their hind-quarters instead of the front; ladies black their teeth instead of keeping

them white; their hair is turned backward the face, which is elaborately powdered; and their anticrinoline corsets are carried to the point of invention not only with the grace of movement with all locomotion, so tightly lower limbs, from the waist do girt round with their garments spinning is followed as a profession; indulge in frequent and loud exhalations as evidence of a good meal. They wipe their faces on their sleeves. They wipe the ink off a nice square of paper, and carelessly throw the envelope into the sleeve, or give an attendant to throw away. Their music is without melody; their landscape painting without perspective, light or shade; their amusements without drawing—mere cruel and grotesque forms dancing in the air without ground to rest on. Their bank-notes of the value of a dollar. They have long perfectly underground utilization of sewerage, and the texture of paper, not from rags, but from the bark of trees, of which they have seven different kinds, all with various uses. They use no milk or animal food; horses and oxen and cows are employed for purposes of draught only; they have no sheep nor pigs; the flowers are without scent, the birds no song, and the fruits and vegetables no flavor.

—A correspondent of the London *Mining Journal* thus disposes of the hermetically-sealed toad business. He says: "Your Derbyshire correspondent in last week's journal, refers to the alleged discovery of a live toad in a solid block of Cannel at the Ravenwood colliery, St. Helen's. This to me is like all other fabulous reports. I would first ask if the man is one of those who get an extra shilling by such tricks; for it looks too much like a trick, when he says his attention was called to the fine appearance of the piece of coal. He then broke it and found it hollow, and then takes it with him to the surface, and finds a toad in it. It is not unusual to find stones hollow. Then what could have induced him to carry it to the surface? I have myself twice had this attempted to be practiced on me. Hollow stones are very convenient to play this trick with. I have seen frogs put into a hole not half the size of a frog's body. I was in Wales a few months since, where some men were sinking a shaft, half in solid rock, and half in old quartz. There were four Scotch gentlemen with me; the men blasted a hole, and in a few moments one of the men came up with a living frog, and said the hole had thrown it out. The Scotch gentlemen were so delighted with the discovery that orders were given for something to be got to convey it to Scotland, and the man was about to get a reward, when I interfered, and asked them if half the shaft was not in old rubble. I had seen it, and they were compelled to acknowledge it, as Mr. Mackenzie, the engineer, was one of the party, and would have gone down and proved it. The smoke of the powder soon caused the frogs near to get out of the water, and this one jumped up on the rock. Miners now-a-days are quite up to all these maneuvers to get a ready shilling. I thought to have heard no more of frogs or toads in stones after what Mr. Hunt openly stated as to himself and all the committee of the Exhibition being misled when they allowed the frog to be put in the lump of coals there as being found in a lump of coal in a mine. Mr. Hunt stated at a public meeting that they were duped, and he much regretted ever consenting to its being put there. It is only narrow-minded men who allow rogues to dupe them in such a way."

—The last living man of a race should be a study for ethnologists and anthropologists. The *Hobart Town Mercury* says: "At the last ball at Government house, Hobart Town, there appeared the last male aboriginal inhabitant of Tasmania. He was accompanied by three aboriginal women, the sole living representatives of

the race beside himself. We may therefore look upon this individual not only as the last of his race *in esse*, but also *in posse*. In this there is something very serious, if not very affecting. What was to have exalted them has tended to their debasement. What was to have been a source of prolonged life to them as a people has led to their speedier extinction. From their first contact with the whites until their final separation the tendency was downward, and it was then too late to arrest the progress in that direction. It is not in human nature to be recuperative beyond a certain point. The number of the aborigines in the first decade of the present century has been variously estimated; by some at 7,000, by others at 4,000 to 5,000 only."

—A laugh has been gotten up at a Paris club at the expense of a not over-intelligent young French traveler, who has been making the grand tour of London during the most promising months for seeing life and fashion. He lodged at a house where no French was spoken, and he spoke no English, except that which is very comprehensible to an English lodging-house keeper's mind, namely, putting gold into his hand. The joke against him is, that his letters to his friends, during this momentous visit, were dated, "No. 4 Billstickers Beware, Leicester-square." This he declares was the name of the street he lived in.

—It is a notable fact in criminal statistics that no fat man was ever convicted of the crime of murder. Stout people are not revengeful; nor, as a general rule, are they agitated by gusts of passion. Few murderers weigh more than ten stone. There are, however, exceptions, which justify us in assuming eleven as the utmost limit of the sliding scale, but beyond that there is no impulse toward homicide. Seldom has such a phenomenon as a fat house-breaker been paraded at a criminal bar. It is your lean, wiry fellow, who works with the skeleton-keys, forces himself through closet windows which seemingly would scarce suffice for the entrance of the necessary cat, steals with noiseless step along the lobby and up the stairs, glides into the chamber sacred for more than half a century to the chaste repose of the gentle Tabitha, and with husky voice, and the exhibition of an enormous carving-knife, commands silence on pain of instant death, and delivery of her cash and jewels. It is your attenuated thief who insinuates himself under beds, behind counters, dives into tills, or makes prey of articles of commerce arrayed at shop-doors for the temptation of the credulous passenger. A corpulent burglar is as much out of place, and as little to be feared, as was Falstaff at

Gadsill—and what policeman ever yet gave chase to a depredator as bulky as a bullock? Corpulence, we maintain, is the outward sign not only of a good constitution, but of inward rectitude and virtue.

—Fitz Hugh Ludlow, in his overland trip to California, found between Utah and the Humboldt Mountains a large desert composed, as he says, of "sand of snowy alkali." He describes it as one of the most dismal and forbidding spots that was ever traversed by the foot of man; but in view of the extension through it of the Atlantic and Pacific railroad, he suggests an interesting possibility as to its future use. He says: "In its crude state the alkaline earth of the desert is sufficiently pure to make violent effervescence with acids. No elaborate process is required to turn it into commercial soda and potash. Coal has already been found in Utah. Silica exists abundantly in all the desert uplifts. Why should not the greatest glass-works in the world be reared along the desert section of the Pacific road? and why should not the entire market of the Pacific coast be supplied with refined alkalis from the same tract?"

—In the new State of Nevada, one hundred miles west of Reese river, beneath a thin covering of refuse saline matter, for a depth of fourteen feet, pure rock salt is found as clear as ice and as white as snow. Beneath there is water, which seems to be filtered through salt to an unknown depth. The whole of the fourteen feet in thickness does not contain a single streak of deleterious matter or rubbish, and is ready for quarrying and sending to market.

—What a delightful correspondent was Dr. Thomas Chalmers! When in college he wrote very regularly to his mother, as all good boys should do. The good lady adjusted her glasses, and reading the superscription of her packages from the post-office, would carefully put away his letters, remarking, "I ken our Tommy's weel when he writes. Ever he comes home he'll read it for me."

—The following simple process will make lead pencil writing or drawing as indelible as if done with ink: "Lay the writing in a shallow dish and pour skimmed milk upon it. Any spots not wet at first may have the milk placed on them lightly with a feather. When the paper is all wet over with the milk, take it up and let the milk drain off, and whip off with the feather the drops which collect on the lower edge. Dry it carefully, and it will be found to be perfectly indelible. It cannot be removed even with Indiarubber." It is an old recipe, and a good one.

—Francis Galton, a well known English traveller, and member of the Club, has this summer made a special experience. He discovered a spot Jungfrau range, where he might stand in safety and watch the avalanches sliding past him, within thirty feet of a person. In one half-day he saw five descents. The avalanches slid two thousand feet, then leaped two great bounds a thousand feet more to the channelling to which he was standing, and then out at the foot of the channel, "a storm of shrapnel." F. Galton describes the general appearance of the avalanche when seen at a short distance, as "an orderly mob filling the street, advancing, not hurrying, to the same point. Something of the same impression is upon one who looks attentively at the sheet of water which rolls slowly down the Canadian side of the falls at Banff. The motion is majestically deliberate though swift, not hurried. The roar of the avalanche in motion, F. Galton compares to "the sound of a rapid tide rushing through many channels." The avalanche is described as consisting of a mass of ice usually from a foot to a yard in thickness which produce "the fearful rattle of ice-cascade."

—Mr. Ferguson states that the Government of Jerusalem under Lieut. Wilson's party of sappers is going on most vigorously. The Pasha's authority affords complete protection, and he gives every facility they require, so that this summer we may hope to have a complete survey of Jerusalem as we have of English cities, and to know as much of its mysterious water and of the means by which its water condition may be improved.

—It may be a consolation to the "up people," whose greatest boast they have never engaged in any employment, to be told of the following: Washington was a surveyor and a printer. Franklin was a printer. Green was a blacksmith. Sumter was a shoemaker. Sherman was a shoemaker. Sherman was a farmer, as were also I. Allen and Stoddard. Hancock was a merchant. Trumbull was an artist. Lincoln was a physician. Arnold (who was a traitor) was a brave man and a general. Arnold was a bookseller and druggist.

—Professor Hoffman has patented in England the process of manufacturing new colors, obtained from iodine. The material, which is to be used for coloring, is made by mixing rosoline with the oil of ethyl, methyl or amyl.

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HOW SHALL WE TEACH GEOGRAPHY?

II.

NEED OF A PREPARATORY COURSE.

IN the January number we gave outlines of a course of study in Geography, which we believe to be the only philosophic one. That course included three separate grades—the Perceptive, the Analytic, and the Synthetic, the work of each being of a different character from that of the others, and having an entirely different object. The work of the Perceptive grade was mainly to become acquainted with the, so to speak, *mechanism* of the earth, and was to be conducted by the examination of a globe as its most perfect representation, and of maps of the continents as convenient representations, on a larger scale, of its several great members.

Undoubtedly all will admit that the only value of globes or maps, as a means of study, consists in the fact that they are symbols of what actually exists upon the earth—that they *represent* the earth, or portions of it, in regard to form, character, and the position, both relative and absolute, of its parts.

If therefore a globe or map can create in the mind of the pupil no image of the earth, or of the portion of the earth which it represents, but is to him simply a ball or a sheet of paper with certain lines and colors upon it to which certain names are attached, then it has no longer any value as a representative object, and so far as practical results in the study of geography are concerned, might as well be dispensed with, and the pupils be taught, as some of us were in childhood, simply to repeat

lists of names, headed rivers, mountains, islands, seas, etc. For of what value can it be to a child to know that a certain line on the map is called a river or a mountain range, if he has no correct notion of what a river or mountain range really is? or, that a certain portion of the map is called England, and a certain point within it London, if he does not see behind the map the beautiful country itself, with its farms, its mines, its great cities and busy villages; and the vast metropolis with its trade and manufactures, its crowds of busy people, its palaces, its gardens, even its fogs—whatever distinguishes it from any other great city?

In order to secure the requisite results from the use of a map, we must give it life and significance, so that when the eye rests upon certain signs there shall start into view a great mountain wall in all its grandeur, with its accessory slopes, and its rivers like silver bands uniting them; or certain other signs shall spread out a broad landscape with dark forests, green pastures, and fields of golden grain, and lakes white with the sails of commerce. The child must first be made acquainted with *nature* as it exists under different conditions of surface, climate, and culture; in other words, he must first know the *thing to be symbolized*. Then the *symbol* will have a value, and not till then.

For this reason the course heretofore delineated should be preceded by an introductory course, the purpose of which shall be by means of a series of simple conver-

sational lessons, to form in the mind a vivid picture of whatever is most characteristic of the great physical regions of the globe: that is, to give to the mind of the child, in regard to each, as nearly as possible, what he would receive by seeing with his own eyes the region in question. These lessons, followed by maps in which the child learns the appropriate symbol for the reality he has been studying, and sees the countries through which his imaginary journey has led him, in their comparative size and relative position, will give to him the correct appreciation of the nature and use of a map, and enable it to become to his mind, in his future study, a source of knowledge which it could have become in no other way. Having made acquaintance with a type of each of the great strongly-marked physical regions of the earth, and learned the manner of representing it upon the map, he is now prepared to read the map itself, and seeing the actual country it represents spread out before him on a smaller scale, learn for himself all the map contains just as perfectly and easily as, having learned the alphabet, he masters the contents of a printed page.

GENERAL PLAN OF PREPARATORY COURSE.

These lessons should commence with what is most familiar to the child—his own locality—as that is within his range of observation, and possesses features that can be made use of in building up the images of remote regions. When he has learned all it is able to teach him, he may, under the direction of his teacher, construct a simple map of the neighborhood, showing the position of every object he has been studying. A map so constructed will never fail to call up a complete picture of the region it represents. The child has thus taken his first step in geographical study; he has made an intimate acquaintance with a portion of the earth's surface, and has formed a symbol by which it can always be recalled, as vividly as the face of a friend by a portrait.

He may now proceed, step by step, to form acquaintance with the characteristic regions of his own country. This is done by an imaginary journey, in the course of which whatever would most strike his

attention in traveling should be put in the order in which it occurs, in and picturesque description, yet in language as he can most perfectly comprehend. Care should be taken to only the striking features of the picture, too great minutia of detail would only its distinctions and weaken its impression. Throughout these journeys the picture of the region under discussion in the child's home, must be kept in mind. Thus, at the beginning of each lesson pupils might be asked to point toward the places of which they have learned, and to state in what direction they are from the place in which the lessons are given. At the end of the lesson the United States, a map of the whole world showing the various regions in their relative size and position, accompanied by a rapid review of the map, will fix in the memory as needed, and make the map a vivid picture of the reality. After this is done, the map can be extended in the same manner to the countries and continents, noticing only what is most characteristic of these. Thus in England we learn the beauty of the landscape, owing to the culture, the commercial and manufacturing industry of London and Manchester; in France the vintage, and silk manufactures—Paris and Lyons; in Switzerland the snow-crowned Alps, the beautiful mountain lakes, and the herdsmen. When these are done, a Mercator's map, in which several continents and oceans can be seen in their relative position without the interruption occasioned by the hemispheres, will complete the preparation for the use of the maps in future study. The lessons, gathering together the ideas in regard to climate, people, vegetation, etc., in different parts of the world, making a little preparation for future lessons on those subjects, would complete this introductory course.

These preparatory lessons should be completed at the age of eight or nine; the pupil would then be prepared to proceed successfully to the study of the globe and maps as the next course of study, and to enter at once upon the course indicated in the former article.

(To be continued in next number.)

OBJECT TEACHING.

LANGUAGES.

IN most schools much valuable time is devoted to the languages without a commensurate result. Reading, writing, spelling, grammar, and rhetoric, consume about two-thirds of the time in primary schools, and nearly as much in grammar and high schools, without a proportional benefit. The mere acquisition of the faculty to crack the nut-shell thus requires more precious time than the eating, digesting, and assimilating of its contents. For language is the mere shell containing all that in one comprehensive name is called *education*. The thorough study of language is in itself a school of mental and moral gymnastics; but to be this, the study must begin where it now in most schools ends. Reading, writing, spelling, parsing, analyzing, etc., do not constitute the study of language. They are only the beginning of it, and for this beginning the pupil pays too dearly.

Object Teaching, in the most comprehensive meaning of this expression, is the means by which in the study of language, no less than in all other branches of education, time may be economized, and better results obtained. But this question arises: How can language be taught according to the manner of object lessons? This question resolves itself into another: How can language, which we produce almost spontaneously, or unconsciously, be converted into an *object* to be seen, observed, experimented on, analyzed and recomposed, reproduced according to the laws discovered in it, and intelligently understood? It is evident that all other branches of learning present more *objective* features than the science of language has, because it is *within ourselves*, and is a combination of *sound*, *fancy*, and *intellect*, and has little about it which of itself attracts our attention and interest. No wonder that of all laws of Nature, those constituting the life of language are the last to be studied and correctly understood. Comparative Philology, which has so essentially simplified the study of language by showing the variations of general laws in various tongues,

is, perhaps, the newest of all sciences. And since the results of this new science have not yet been rendered generally accessible, it is natural that there should be few efficient teachers of language. Nobody, indeed, can teach the science of language who has not mastered at least two different tongues, practically and theoretically.

To teach a child at the same time two, or even three languages, is not more difficult than to teach one of these languages. Any child may be made to acquire his mother tongue more perfectly by acquiring, at the same time, a second living language, or even a second and third, one of which is grammatically acquired. All learning consists in the fixing of impressions which accumulate and connect themselves according to similarities and differences. It requires only a little more time to impress on the mind, together with the image of a *sheep*, its English, its French, and its German name, instead of the English name alone; each of those names is more deeply impressed on account of their difference of sound and identity of meaning; memory is considerably strengthened and recollection facilitated, by fixing each image together with different names. Each name will reproduce its equivalent in the other two languages, whenever needed; the image will recall each of the three names which may be required. Thus from an earlier period the discriminating and the comparing powers of the youthful mind are called into activity, together with memory; and presence of mind, attention, and the faculty of producing the correct pronunciation, are simultaneously exercised.

Thus we see that Object Teaching in languages is best carried on by teaching, beside the mother tongue, at least one foreign language, and the two both grammatically and by conversation. Language becomes more objective, assumes more tangible form, when observed in a foreign tongue and at the same time in the mother tongue. In the form of a foreign sound it is, as it were, a stranger to the mind, and attracts more attention; and the corresponding ex-

pression of the mother tongue, into which it is translated, gains by comparison with the foreign sound and word more of an objective character, is seen more at a distance, used with greater attention, impressed with greater distinctness and correctness.

These few explanations will, perhaps, serve to make many remarkable facts intelligible. It is a fact that spelling may almost entirely be done away with, if the child begins two languages in the lowest class in school, and the teacher understands his business. Accustomed from the first to associate the meaning and the sound of the foreign word with its printed and written image, the mind is trained to execute the same combination with the corresponding word of his mother tongue, fixing in his mind its printed and written representation. Defining may, to a great extent, be dispensed with if two languages are taught at once. Translation exercises step into its place, and fix more fully and correctly the meaning of each individual word. A boy who has learned to translate fluently and correctly into and from one or two foreign tongues, may be depended on to define well the words of his mother tongue. More, he will better discriminate synonyms. It is a bad practice to define *laborious* by "hard," "difficult," or *penalty* by "punishment," the respective expressions being only similar, not identical; such defining weakens in the pupil's mind the discriminating faculty in the use of synonyms. Intonation, Accentuation, and Elocution are among those common English branches in which time may be economized by call-

ing to aid the study of foreign languages. You cannot well acquire their use intelligently appropriating the law of accentuation and intonation. If you once acquired these laws, you with slight modifications, the laws of Accent and Intonation in every language will make practical applications of them in every tongue. Even Reading is a great plague of English teachers—tated by learning to read in two languages at the same time.

In schools into which the study of more than one language cannot, under circumstances, be conveniently introduced, the method of Object Teaching can be applied to the mother tongue. Reading, Writing, Spelling, Defining, and Analyzing can be taught in a manner that time will be considerably economized? It can be economized if the teacher himself is intelligent and a student of the laws of language. The teacher at the school, and all improvements in the school must begin with him. Calligraphy are all improvements in schools and methods of teaching if the teacher enters into their spirit, to simplify and condense the laws and principles of each branch of learning into the least compass, to make pupils constantly and recompose the elements and make them become their own at the earliest possible stage of development? But to enlarge upon this more space would be required than afforded. The subject merits careful consideration.

THE VENTILATING AND WARMING OF SCHOOLROOM

VENTILATING.

AS if by universal consent, the importance of proper methods of warming and ventilating is disregarded alike by teachers and school officers. Schoolhouses, in the rural districts, frequently possess no means of ventilation except small windows opening from below, or annoying crevices in the walls; while the heating apparatus is a miserable stove, which, after having been

worn out by a long term of honorable service in the parlor and afterwards in the spare bedroom, has been donated by a public-spirited individual, who has gained great reputation for generous attachment to the cause of popular education. This determined neglect, though a measure pardonable a few years ago, is now utterly inexcusable. There is no doubt that much of this indifference

in ignorance, and that, were the
of those interested properly
a reform might be made. To
e our mite, we will treat of ven-
n this paper, and of warming

Official examination will disclose
rious effects arising from defective
n. Pure air is composed of nitro-
parts, and oxygen, one part, by

The atmosphere, however, in-
vaintains such impurities as carbonic
nonia, and organic matter. When
ged with any of these foreign
the air becomes deleterious. No-
es it become thus injurious more
an in a close, crowded room.

THE AIR IN SCHOOLROOMS.

strate this, let us take, as a com-
a, a schoolroom on a winter day.
d with pupils, is well warmed, and
s and windows are shut. Each
the room inhales, each minute,
red cubic inches of air, and re-
with a poisonous mixed gas,
l of air, carbonic acid and oxyd,
fete nitrogen, and the sensibly
products of pulmonary perspira-
esides the action of the lungs, the
urface of the body is continually
F vapor of water, as well as more
ole excrements, through insensible
ion. The stove is continually
ng oxygen, the vital gas, from the
d substituting nothing but irres-
gases. If the stove is close, it
is injurious substances, but simply
the air by abstracting its vital

As the room is close, the chim-
rs badly and frequent clouds of
re driven into the room, so that
and other acrid compounds are
the impurities already present.
en we have a true picture, to be
ry winter day—a schoolroom with
eans for creating impure air, but
means for its removal. The atmos-
an incredibly short time becomes
y impure, and as the brain cannot
erly except when in the midst of
l cool oxygen, clearness of mind
sible; comatoseness seizes both

teacher and pupil, so that frequently the
former thus loses a hard-earned reputation.
If the air of such a room were removed
through a ventilator, it would be disgusting
to a person standing in its passage; while,
if driven through water, the liquid would
soon be colored by animal matter, and
acquire a most offensive odor.

THE BEST MODE OF ILLUMINATING.

In schools held at night the lights are an
additional source of impurity, inasmuch as
they withdraw oxygen from the air and
return it in combination with carbon or
hydrogen. Not unfrequently, when the
materials used for illumination are impure,
compounds of sulphur and ammonia are
also formed, which are dissolved in the
vapor of water in the air, and either con-
dense upon the furniture, corroding it, or
are drawn into the lungs, where they are
productive of very serious injury. Illumi-
nating gas is unquestionably the best agent
for lighting schools, halls, etc., since for the
production of a given amount of light, it
requires less oxygen than either candles or
oil and moreover produces forcible upward
currents in the air, thereby assisting ven-
tilation.

The agents to which we have referred
are at work, with more or less activity, in
every schoolroom, and unless some means
is employed to counteract their effects,
lasting injury to the occupants must result.
To obviate such a difficulty by the removal
of impurities is the object of ventilation,
which, if perfect, would continually remove
all the contaminated air and supply an
equal volume of pure air in its place. This
theoretical perfection is yet unattained.

HOW MUCH AIR DO WE NEED?

The amount of fresh air required for
thorough ventilation cannot be accurately
stated; it is impossible to estimate exactly
the quantity destroyed by respiration,
cutaneous perspiration, and combustion.
The requisite amount is variously stated.
According to Hood, only three and one-
half cubic feet per minute are necessary
for each individual. Brennan regards ten
and one-quarter feet as absolutely essential,
while Dr. Reid believes thirty cubic feet
per minute no more than sufficient.

THE PRINCIPLE OF VENTILATION.

Most systems of ventilation are based upon the principle that currents are caused in the atmosphere by increase or diminution of temperature. Such currents may at any time be observed by looking across a heated surface at an object, which will then appear to possess an undulatory motion. If a small piece of thin paper be attached by a wire to the side of a stove-pipe, it will be lifted and sustained by the upward current of heated air. If a door leading from a warm room into one colder be opened, and two candles be held, one at the top, the other at the bottom, the flames will be deflected in opposite directions, while the flame of a candle held about the centre will be unaffected. When heated, air becomes specifically lighter and rises. In the Ohio School Library, heated by stoves, the temperature at the ceiling was 80° F. warmer than at the floor. In churches this fact is frequently very perceptible. While the temperature below may be agreeable, in the galleries it may be even stifling. The currents, thus caused, continue to operate until the temperature of the room is nearly equal throughout. While they cause the air to become thoroughly contaminated, they also afford a simple and efficient means of ventilation. In the systems based on this principle, the hot air rises to the ceiling and passes out through openings in the wall, carrying with it the impurities. By another method, known as mechanical ventilation, pure air is forced into the room by large fan-wheels, and the impure air is driven before it. This system is now employed in large halls, and proves effective.

CONSTRUCTION OF BUILDINGS, CHIMNEYS, ETC.

In constructing an apartment with respect to ventilation, care should be taken lest any portion be so arranged as to contaminate the atmosphere unnecessarily. In schoolrooms, especially, the ceiling should not be low, for while the room is kept warm the impurities will in a great measure tend to collect in the upper portion; so that if the ceiling is high, even though the provisions for ventilation are inadequate, the deleterious gases will not to any considerable extent descend to the level of

the pupils during school-hours. the chimneys should be carefully against, in order to avoid smoky draught. Smoky chimneys, according to Dr. Silliman, may arise from various causes: two openings from the same flue in one apartment or adjoining apartments communicating with each other; fire is kindled in but one; a power is in one portion of the house, being inefficiently supplied with air from another; may draw from other flues, and reversal of the draught; the flue is so large as to permit currents of air to descend at the angles, that is, the flue may be "upside down;" or a high boring building may direct a cold draught down the flue in certain states of the weather. Frequently only the latter two of these contingencies need be considered. The draught must be smaller at the top than at the bottom, because the air, as it rises, cools and contracts in bulk, so that the flue diminishes gradually in size, and air cannot force its way out against the pressure of the colder air above. It is also in any case to provide against the effect of the wind by placing upon the cowls hung on vanes to turn against the wind. These precautions will prevent the occurrence of smoky chimneys in school buildings. Remedies for the other contingencies mentioned will readily suggest themselves.

HOW TO DISCHARGE THE IMPURITIES.

Such general points in the construction having been attended to, means for the escape of impure air should be provided. Apertures in the ceiling or wall that are essential. If the operation is made in the wall, they should be so placed as to give the flue as possible, in order to maintain the warmth of the air may be maintained by its ascent. The apertures should be provided with a self-regulating device which would permit only an upward current. Cowls are frequently placed over the openings of the ventilators on the roof; these take advantage of the wind, and by these contrivances draws up, and removes the column of impure air by suction. The removal of contaminated air is not without difficulty; but when we wish to procure a proper supply of pure

problem of ventilation becomes complex. The introduction of twenty cubic feet of fresh air per minute, for each individual, is liable to induce draughts, or in winter too great depression of temperature. Countless expedients have been devised, all of which are more or less open to objection. In most apartments, where but few persons assemble, a sufficient supply of fresh air is obtained through crevices about the doors and windows, while the greater portion of the impure air is removed by the grate into the chimney. For larger apartments containing many occupants these will not suffice. For such, perforations in the floor have been recommended, but are of doubt-

ful sanitary effect, as they produce serious draughts and fill the air with dust. The most efficient and least injurious method yet presented is that of admitting the air behind furniture through openings protected by wire-gauze. In this way, local or sharp currents are avoided. The wood work round the base of the walls might be perforated in like manner, and the occupants shielded from the currents by a slight wainscoting rising about two feet. This part of the problem is somewhat obscure. Its connection with warming is so intimate, that we must defer its further consideration until we reach the discussion of the various systems of warming.

STRAY CHAPTERS BY AN OLD SCHOOLMASTER.

"BOARDING AROUND."

AMONG the semi-barbarous customs long prevailing in most of the older country school-districts, not the least is that of "boarding around." The teacher received his board as a portion of his wages, but in order to obtain it was obliged to lodge with his patrons in rotation. The custom arose in the earlier and less civilized days of our country, when money was scarce and highly prized. It was then the custom to pay professional men partly in money and partly in "kind." Teachers, however, were generally unmarried, and therefore could have no possible use for produce. Hence they were compelled to take board in commutation. In those days mental labor was held in slight esteem, and, although required to work from 8 A. M. till 5 P. M., teachers were regarded as little more than respectable idlers. It was therefore thought no more than proper that they should be at some inconvenience in obtaining their daily bread.

"Boarding round" still prevails in some portions of the country, but is pretty generally abolished. Farmers have found it better to pay a few extra dollars than to have their privacy intruded upon and their family affairs laid open to the public view. Teachers, more especially those of the female sex, were sadly given to comment upon the peculiarities of households,

and so necessarily became the vehicles of common slander. This was encouraged by the people themselves. Indeed, I know of instances where teachers found it necessary to gossip excessively in order to retain their positions, as, by many, no teacher was regarded as "qualified" unless capable of giving in detail every bit of domestic scandal occurring in the households through which he passed.

As time wore on, however, this gossiping was found to possess serious drawbacks. Moreover, as civilization advanced the instructor became more respected, and more regard was paid to his comfort. The sudden change from feather beds and heavy blankets to wretched straw beds and damp coverings, often induced disease; the incessant clatter of tongues and urgent inquiries concerning the affairs of neighbors, were harassing. Besides, the school districts were frequently of great extent, so that it was sadly inconvenient for the poor instructor to trudge five or six miles through heavy snow to the cold school-room, where he had to kindle his own fire. These selfish and benevolent considerations together have, in great measure, effected the reform.

MR. WILLIAMS BOARDS AROUND.

The winter term in H—— contained one hundred and twelve days. There were

sixty-five pupils, and therefore the teacher must remain about two days at the house of each pupil. Sometimes Mr. Williams was fortunate enough to stay five or six days in one family, but never in such cases found his comfort much enhanced, for generally when a farmer luxuriates in a large family of children he finds very little upon which to support them. Consequently, under such circumstances, Mr. Williams was usually on short allowance. In the town of H— these prolific families all lived at a great distance from the school, and thus another difficulty was added to the pedagogue's category; for it was well understood that, though the snow were five feet deep, or the road overflowed by a new deluge, there could be no excuse for his absence, lest some pupil, more daring than the rest, might be bold enough to force his way through to the school.

Just before reaching Mr. Flint's turn, Mr. Williams had been boarding at the house of a wealthy farmer. There he had been put in the spare bedroom which had been unoccupied for eight months. Of course no attention had been paid to airing the sheets, and as the weather had been damp, our worthy friend took a severe cold. This, too, although he had been regaled with boiled potatoes and salt pork, fried to the very perfection of crisp. As teaching school with a sore throat was no easy matter, he was anxious to change his quarters. Not indeed that he expected more delicate food, or more comfortable accommodations, but rather because he was well acquainted with Mr. Flint's peculiarities, and surmised that the bedclothes would not be damp, since they would have to be taken from the family beds.

HIS EXPERIENCE AT MR. FLINT'S.

Whatever were his expectations, Mr. Williams evinced great pleasure upon arriving at Mr. Flint's, and was most heartily welcomed by Mrs. Flint, whose unpopularity among her neighbors was such that she had no means of gleanings the town slander. She had therefore for a long time anxiously awaited Mr. Williams' arrival. So likewise had poor Thomas; but from different motives. He, if it were possible, feared the pedagogue more than he did his

father, and shuddered lest upon his arrival he might use the rod, or cause his father to do so. But Tommy was forgotten, and did not receive even a nod of recognition, for Mr. Williams belonged to that race of teachers, unfortunately not yet extinct, whose acquaintance with the pupil ceases the moment he crosses the threshold of the school.

Anxious as Mrs. Flint was to learn the news, she controlled herself so far as to remain apparently comfortable until she had graciously served a sumptuous supper, consisting of the usual complement of warm potatoes, dried blackberries, and cold pork. This having been discussed in a hearty manner they adjourned to the fireside, where the affairs of the neighbors might be impartially investigated. Mrs. Flint was uncomfortable—she evidently desired to speak to Mr. Williams about something, but, awed by his remarkably abstracted appearance, refrained. Thomas lay crouching beside the fire awaiting interesting developments. Silence reigned supreme, until Mr. Williams with a genial smile stretched out his arms, opened his mouth, and asked Mrs. Flint whether she had heard of "the astounding denouement of the peculiarly disastrous catastrophe at Mr. Townsend's."

"Goodness! No, what's that?" ejaculated the stricken woman.

"Why you see," continued Mr. Williams, "Mr. Townsend was given to staying out late of nights—"

"I told you so, Flint. I knew no good could come out of Townsend. Just as I expected—been courting some other man's wife. Poor woman! how I pity his wife! I dare say she is most broken-hearted. Oh! it's awful—"

"Pon my word, Mrs. Flint, I assure you, you are entirely wr—"

"Oh, no I an't. I saw him the other day out riding with Mrs. Aiken, way down the road."

"Bless my soul," cried Flint, "I hope that an't so. I don't believe Mrs. Aiken would run away with a married man. I always liked her. When I was younger I used to like to—"

"Flint, you'll kill me, I know you will! I suppose the next thing will be, you'll be

with that ugly, dirty woman,—and don't get off with her first." "word," said the thoroughly Williams, "I declare you've aken what I meant to say. I ag about that. Hadn't the . I was only going to tell you nsend's hennery took fire, and g out late at night, he hap- it out in time to save his tur- There wasn't any thing "

laughed at Mrs. Flint, who ely sad and disappointed. At unger found vent upon poor n, with direful rage, she struck o bed. While she was thus r husband engaged the peda- tical matters. The embargo trade by Jefferson, although e years out of date, had but come to the knowledge of s time, and was then, of course, topic. While they were thus Townsend, to whom reference ade, walked in. He was an great importance and self- upon being informed of the onsideration, proceeded to de- tation, in the course of which gely from the Bible. Among ed the, as he termed it, fage in Proverbs: "Time and no man." "Taint in the Flint. "Taint in Proverbs, ys Williams. "Don't care," ad, "if it 'aint there it's good there," and so he continued unabashed until Mrs. Flint re-

homable is the female mind! elcomed Mr. Townsend as cor- igh she had never entertained gainst him. Her return was renewing the gossip. There reside in the lower or western own an antiquated matron with four daughters, fine marriage- Unfortunately the spinsters no husbands because of their emes to entrap young men. therefore, afforded a very rea- for conversation. The men, say, joined in repeating the

scandal, for in those days they were more domestic in their habits and consequently more readily molded after their wives' patterns than now. Poor Mrs. Holliday, how her reputation suffered that night at the hands of her unscrupulous judges! Her motives, her plans, were all distorted, and she was abused and slandered until Mrs. Flint lost her breath and intimated that it was time to go to bed. Mr. Townsend unhitched his horse and rapidly drove home. It was now eight o'clock, the hour at which all good country people of the olden time retired in winter. Mr. Williams was then shown to his room and left for the night.

How sadly was he disappointed! Instead of comfort he found wretchedness. His room had been used as a store-room: there were apples drying on the rafters, bags of feathers nestling in the corners, and musty hams hanging round the walls. The windows had lost their first estate, if indeed they had ever enjoyed any. Dirty rags and rejected garments filled up the holes intended for glass, giving the place an appearance of the utmost desolation. In sorrow the poor schoolmaster retired—to sleep? No; but to listen; for during the whole night starveling rats held high carnival round his head and pillow, and playing atrocious pranks with his hallowed nose; now driven by fierce assault; in a moment returning with redoubled host and vigor, until at last poor Williams, wearied with incessant fighting, yielded the battle, and wrapping himself tightly in the blanket, gave himself over to slumber continually broken by harassing dreams and terrific nightmares. Sleep at length became impossible, and so with becoming resignation the wretched man yielded to his fate. The morning light stole through the rags in the windows, and found him sitting bolt upright in bed with sunken cheeks and glaring eyes. Hastily dressing, he rushed down stairs, helped milk the cows, bolted his breakfast and hurried off to school, where after kindling the fire he soon regained his accustomed equanimity. With difficulty he succeeded in opening the school, and soon after fell into a most comforting nap, from which he was awakened by the snoring of two children sleeping at his feet.

Evening came: Mr. Williams slowly and sorrowfully wended his way to the abode of the Stingy Family. For many a year he had been a teacher; he had slept on boards, in dwelling-houses, and in barns; by unscrupulous boys he had been washed with snow, and dipped in creeks, but never had he suffered as on the preceding night. Calmly though resignedly he ate his supper, and anxiously waited the summons to retire. Supposing him ill, Mrs. Flint insisted upon administering some thoroughwort tea, which she believed to be a "cure-all."

At length he went to his room. The night was bitterly cold, and the wind screamed wildly as it drove past the pitiful heap of logs which protected him. The rats, fearful of the cold, nestled closely together in their holes, and Mr. Williams went to bed gratefully pouring out his thanks to Providence for vouchsafing so wonderful a deliverance. In this frame of mind he quickly fell asleep. While the pedagogue slept the storm howled on, until it cleared its throat by a fall of snow. Coming from the east, it tore up trees and prostrated barns. The Flint homestead it summarily disposed of by removing the roof, and depositing it some rods away. And still it snowed—as much in Mr. Williams' bedroom as in the open field. But the schoolmaster slept on; the toils of the preceding night had unfitted him for wakefulness.

But when, at early morn, Mr. Flint's enterprising chanticleer, peering out above the snow, crowed his cheerful and defiant summons, the poor pedagogue woke to any thing but a proper sense of his condi-

tion. He was bewildered—snow up around him, and in him; for as he lay in astonishment, the wind drove it down his throat. But the musty hanging round the walls, and the windows, enabled him to realize the situation; its horrible nature can scarcely be conceived. His clothes, carefully the deformed chair, which formed furniture of the room, were full of snow while his boots appeared to have special objects of dislike to them, since over them had drifted a sad rescue pile. Summoning all his strength, he leaped from bed, dressed himself, the rapidity becoming his countenance, "change of base," and hastened upstairs to acquaint the proprietors with the state of affairs.

You who have been made acquainted with the peculiarities of the family, can readily conjecture the dejection of Mr. Flint as they revolved in their minds the loss they had suffered; and you can imagine the sorrow of Mr. Williams because of their abstracted minds, unpelled to go to school without his help, there to sweep the snow from the room floor. But I need not follow this heartening subject. Mr. Williams was not improved by his changes; indeed, I feel safe in saying he was made worse—so much so, in fact, that he scarcely recovered his voice as to admit of his officiating at the exhibition of his school. This was about three weeks afterward, at the mean time I can lay my hands on the records, this grand Exhibition will be the subject of the next chapter.

THE NEW SCHOOL-LAWS OF MARYLAND.

THE school system of Maryland has been remodeled by legislative enactments; a summary of the principal features is here given. The new law provides,

1st. For a Board of Public Instruction, consisting of the Governor, Lieutenant-Governor, Speaker of the House of Delegates,

and the State Superintendent of Instruction, and for Boards of School Commissioners for the city of Baltimore and each county.

2d. For the establishment of Primary, High, Normal, Model, Agricultural Schools and Colleges, and a State School.

a uniform series of Text-books, ed by the State Board and con- by them; but any county or purchase the required books arties they choose other than ficers.

r Teachers' Associations and The Associations to meet quar- h county, one for every twenty- . The Institutes to hold one- ly, of at least six days, and to d of at least fifty teachers from re adjacent counties. These be temporary Normal Schools, rs to attend under penalty of twenty-five dollars.

rd of Public Instruction meet upervise all colleges and public e a code of by-laws, appoint ofessors of the normal school, e any county commissioner for ty, and hold all lands, money, property, in trust for the use Their incidental expenses are ed \$500 per annum. This and ent's salary to be paid by the

e superintendent's office must nore; he is to visit each county old teachers' institutes, deliver esses, send circulars to commis- l teachers respecting the best conducting schools, and report rnor on the fifteenth of Decem- ; he may grant certificates of to teachers, or annul any others, when acquiesced in by of Education; he may decide es which arise under this law, vent any case from being tried, by the law courts; nor has he ction in matters relative to perty, or vested rights; he is to is office school-books, apparatus, harts, and to expend \$100 yearly l valuable works on education, efit and use of teachers; he is e to such school journals and education as he may consider id furnish lists of books suited listric libraries.

nty School Commissioners are for four years, by the State

Board of Education; each commissioner to have charge of not less than fifteen schools. Every county board has a presi- dent also, appointed by the State board to examine teachers and have a general superintendence of every thing pertaining to education in his county. The commis- sioners are to lay off school-districts where counties have not been so divided, or amend such as have, if thought not suitable—the districts not to exceed four miles square; the surveying, registering, &c., to be at the cost of the county. Each commissioner appoints the teachers for his portion of the county, from those who hold certificates of qualification from the president of the board or the State superintendent of the Normal School.

The resident voters of each school district meet the first Monday in May yearly, to discuss matters relative to their school and make suggestions to the Board of Commissioners. Thus the people may counsel and advise, but not directly control the management of the schools. If they contribute \$20 yearly to the school library, the State will do the same.

Schoolhouses are to be built on a uniform plan hereafter, having proper regard to light and ventilation, from drawings to be furnished by the State superintendent. Disfiguring the buildings in any way has a fine of \$50 or thirty days' imprisonment, or both. Schools to be kept open at least six months in the year, and not longer than ten. July and August to be vacation. School sessions must be six hours a day, Saturdays excepted, and to be free to all *white* youths over six and under nineteen years of age. The branches to be taught are: Orthography, Reading, Writing, English Grammar, Geography, Arithmetic, History of the United States; also, Algebra, Book-keeping, Natural Philosophy, Vocal Music, Drawing, Physiology, Hygiene, and Domestic Economy (Political Economy being singularly overlooked). Schools of over sixty children to have two teachers. Public examinations *quarterly*. Persons disturbing a school, while in session, are liable to a fine of \$20, or thirty days' imprisonment. Salaries of teachers to be fixed, from time to time, by each Board of

County Commissioners. No child who has not been vaccinated, can be admitted in any school.

There is to be at least one High School in each county, for instruction in Latin, Greek, and Mathematics, sufficient to enter any one of the State colleges, and also in Military Tactics. The terms of admission to these High Schools to be fixed hereafter by the State Board of Education.

The State colleges, or the University of Maryland, are: St. John's, Annapolis; Washington, Chestertown; Agricultural, Prince George's County; Faculty of Arts and Sciences, Baltimore; and the Law School, Annapolis. All these receive endowments from the State, and are to educate and furnish books free to one hundred and fifty male students; and the Law School to ten graduates of these colleges. (The Medical School was to have taken ten others free, but this was unfortunately rejected in the Legislature.) The Baltimore Female College receives free twenty-two young ladies,—one from each county and the city, having been endowed with \$2200 yearly, which places that institution in a highly favorable position. Graduates of the High Schools are to have preference for appointments to *free* tuition in the colleges. The annual commencement of all these colleges is to be on the fourth of July.

The State Normal School is to be located for the present in Baltimore. The number of students of both sexes to be educated free in the science of teaching, is not to exceed two hundred and fifty, with fifty more at \$25 a session. In conjunction

with the Normal School are to be and Experimental Schools, located part of the State required, and to schools, for the benefit of those who desire to send to *free* schools, yet be connected with the organization of public instruction.

The school taxes paid by colored and any donations made, are set aside for schools for colored children, to be under the direction of the School Commissioners.

All private schools, academies, and colleges to report to the President of the School Commissioners of the city or in which they are located, on or before the first of July, annually, according to blanks to be sent them may require.

Male teachers must not be less than twenty, nor females less than twenty years of age. Their certificates to be for three years, and to cost them two dollars, according to grade.

The teachers of primary schools to be paid from a State tax of 15 cents on \$100 of taxable property and the free-school fund, to be distributed among the city and counties in proportion to their respective population between fifteen and twenty years of age. All local taxes for educational purposes to be levied after the year 1866. It is estimated that the superintendent this will pay the sand country primary school-teacher required, an average of \$345 per year. Schools now in operation under the laws to continue until the 30th of September 1865, and the new system to go into operation throughout the State on the 1st of September ensuing.

OUT-DOOR LESSONS.

RURAL excursions, in developing the youthful mind and heart, are most important. The anticipation of rambles through meadow, grove, and forest, have a wonderful effect in awakening the dormant powers, and reanimating the weary brain. They furnish the means of illustrating many studies more happily than can be done in the school-room; they aid in impressing

truth more vividly, and they create a habit of observation and reflection.

Seasons of unrestrained enjoyment close the bonds of affection between teacher and pupil. They promote harmony among the children, and afford them frequent occasions for practising self-control, generosity, and other noble traits of character. They cultivate a love for the

ful, and a spirit of communion in better nature and the Nature

They exalt the imagination, even the youngest to experience surer than those of sense.

pupils have become so accustomed to out-door lessons that they treat them as they do any school exercise. The first budding, balmy days of the last bright afternoon of August are eager for a walk to the

When the warm and dry days come, I often hear at recess a murmur in the hall, and presently two of the youngest come in smiling with the petition—"Miss French, the girls say won't you please take us to the mountain this afternoon?" As it is her own, Miss French often dismisses them a little earlier than usual, with an injunction to be ready at one o'clock, we go home to get a dinner. At the appointed hour all are at the school-room again, each with a little basket containing sandwiches, pickles, pretzels, or whatever dainty the mother and maids can prepare in an hour.

A walk of half a mile brings us to a clearing, where we refresh ourselves with sparkling water. Then pushing through the woods inside another half mile, we enter a shaded ravine with its floor of dark dancing over pebbles and smooth rocks, we presently come upon a clearing at the side of a smooth stream. Here the baskets are set out, a general search begins for wildflowers, leaves, mosses and ferns.

Each girl is kept busy looking at the plants collected, and answering the questions of the others, and another comes eagerly

Miss French see this beautiful insect! See what a singular insect!" "What plant is this? Will it grow if we take it home?" and sometimes the teacher answers all these eager questions.

The baskets are opened, snowed under the trees, the luncheon is eaten, the hungry little girls help each other, are helping themselves, while the teacher says a pleasant word and merry laugh enlivens the mountain meal. Playing and singing an hour brings the time for us to return homeward. At the schoolroom

door we part until the morrow, when brighter faces and more perfect lessons are the teacher's reward.

As the days grow longer and warmer, the young faces begin to look tired and the young minds seem less active; and we go home again. This time, perhaps, we visit the "River of Rocks," a long and wide bed of huge mass-covered rocks, lying in a gorge between spurs of the mountain, seeming to have been swept there by some mighty flood, ages ago. After skipping, climbing, and tumbling over the rocks, little groups seat themselves here and there, chatting in girlish fashion, wondering how and when the rocks got there, plying their teacher with all manner of questions, and wishing for a geologist to tell them every thing about them. Then flowers are sought again, and we go home laden with rare gifts from our grand old mountain—bouquets of gay scarlet columbine, wild honeysuckle, and clusters of pink and white laurel with its dark, glossy foliage. But better than all, the pure, bracing air, the balmy mountain odors, and the sweet music of birds have cheered our drooping spirits, and imparted a keener relish for mental labor.

At the close of the term comes our grand "gala day," when we invite the families of all the children, and all our former pupils to accompany us. But perhaps the gayest of all are our "Indian Summer" holidays. Then the brilliant scarlet, crimson, golden, and brown leaves are woven by skillful little fingers into wreaths, garlands, crowns, and banners, and my laughing girls are transformed into sylvan princesses in their royal apparel and rich embroidery, happier than Stewart's most costly fabrics could make them.

The next morning when the teacher enters the school-room she finds them all gathered around the "color chart," comparing the tints, shades, and hues of the leaves they have brought, and referring to her the decision of some uncertain shade. And so it is always when we go out—something is better learned than if we had not gone; our hearts are refreshed, and our bodies invigorated more thoroughly than by a lonely, solitary walk.

Thus, by my own experience, I have be-

come convinced that the teacher has no more effective auxiliary in the work of training children aright, than the very simple one of bringing them freely and frequently into contact with the holy truths

and mysteries of Nature, and winning them to "listen to her teachings." Clouds and sunshine, earth and air, all have their lessons of wisdom for the willing pupil, to ennoble, purify, and bless.

OUR MILITARY SCHOOLS.

II.

IN a former paper we endeavored to show the importance of educating the people of this country in the use of arms, and recommended military discipline and drill in school as best calculated to secure this end, without interfering with the pursuits of peace. Beside the preparation thus afforded for national defence, there are many benefits to be derived from such military training by the pupils themselves.

I. Physical Development.—In the first place, we recommend military exercises for the physical development which they give.

Our best students often turn out to be our least useful men, for want of that strength and elasticity which well-regulated exercise at school would impart. Such students, if left to themselves, either take no exercise at all, or else they take it in a violent, irregular, and imprudent manner.

Military drill, if properly varied and adapted to their strength and temper, will be found to meet exactly their wants. It makes a certain amount of out-door work imperative, corrects the stooping position of the head and shoulders, expands the chest, and quickens the circulation by bringing into moderate exercise nearly all the muscles of the body. More than this, and what is of equal importance to all classes of boys, military drill imparts a firm, graceful, and manly carriage, giving ease to every motion, and tending to overcome awkwardness and constraint. This exercise, more than any other, serves to bring the body into prompt obedience to the mind. It trains the muscles to respond instantly to the dictates of the will, and thus secures to the individual through life

readiness and accuracy of action, which might otherwise have been blundering and dilatory.

We cannot leave this part of the subject without an earnest word of protest against the neglect of physical training that has generally prevailed in our schools. It would seem to be unnecessary to make an appeal upon a point already so largely discussed, and so generally conceded by the intelligent public. Yet very few seem, by their actions, to regard the matter as of any consequence. Teachers are hindered from carrying out their honest convictions in this matter by the demand of parents for high-pressure mental training, for a certain course of books to be gone through in the fewest possible years, regardless alike of the welfare of body and soul. The brain is thus abnormally and prematurely developed, and the body becomes an intellectual prodigy. Education, however, is not a mere cramming of the mind, but a harmonious development of the whole being, physical, mental, social, and moral; and to neglect any one of these is to do a great injury to the future career of the pupil.

II. Mental Training.—We come now to consider the effect of military training upon the mind.

The first, though not the principal benefit to be noticed, is, that much useful information upon military matters is gained, which is at this day an essential part of a good education.

The instructor should not aim merely to impart proficiency in drill, but should make his pupils, of a proper age, familiar with military terms and forms of ceremony, with the construction and use of light

arma, artillery, and projectiles, with the details of camp life, and the maneuvering of skirmishers in the field, with the construction of fortifications, bridges, and with all the elements of military science.

The knowledge thus gradually and almost imperceptibly acquired at school, would be valuable to every intelligent man. Aside from this, there is a certain discipline of mind resulting from military training, which can be acquired in no other way so well. As the body is habituated to prompt obedience to the will, so the mind is trained to quick comprehension and rapid decision. And as the stiff and awkward motions of the body are softened into grace, so also are the wavering and hesitating habits of the mind overcome.

Again, military discipline, if discreetly applied, exerts a powerful and beneficial influence upon the character of boys. They have a share and interest in the government of the school, if administered upon this plan. Their feeling of honor, their self-respect, and their sense of individual responsibility is thus increased, which could not be the case under the old system of appointing "monitors." The officers learn to bear position and power with becoming modesty and forbearance, if they would retain the confidence of the teacher and the respect of their comrades; and all pupils learn subordination and deference to delegated authority. Such training will be of great benefit to the State as well as to the individual.

Further, we think that observation will show, that military exercises stimulate the ambition of many otherwise listless boys, giving an impetus to their progress in every department; and that it begets in all the pupils an *esprit du corps*, which very much increases their happiness and contentment.

We have known many indifferent and idle boys changed to enthusiastic students under the healthful stimulus of military emulation, a new life being given to their whole physical and intellectual being.

We have now imperfectly noticed the principal benefits arising from such a military education as might be obtained at school, though we are far from asserting that such benefits do always result, in the present imperfect condition of this depart-

ment. Still, while we admit that there are yet many imperfections in our military system as applied to schools, we must deny the force of some objections which are often raised. One objection is, that it creates a military spirit in the boys. No patriotic man or woman (except, perhaps, a Quaker) should deprecate such a spirit. In time of peace it could do no harm, and in time of war might be of incalculable benefit to the country. The whole tendency of our institutions is unfavorable to the cultivation of a military spirit; hence it becomes us to encourage rather than to hinder it. Again, it is urged that the time devoted to drill is so much lost from study. This objection can have no weight until it be shown that the pupils of military schools generally maintain a lower grade of scholarship than those of other schools. The discipline of body and mind afforded by military exercises, gives greater vigor to study, and greater relish to sport.

Another source of anxiety to parents, is the danger of handling firearms. Such parents forget that it is far better that their boys should be taught to handle them skillfully, than that they be left to experiment for themselves, as invariably they will do sooner or later.

In view of the insufficiency of all such objections, and of the many advantages to be derived from military exercises, it will appear that they are calculated to supply a great deficiency in our educational system, and to contribute to the healthful development and intellectual progress of the pupils.

It is not strange that many imperfections at present exist in our system of military education, for heretofore the subject has received but little public attention. Each teacher has acted independently in the matter, and often without a clear conception of the ends to be secured.

It is only by discussion, by a comparison of many systems and results, and by uniting the experience of able instructors, that a substantial and adequate system of military training at school can be devised.

That such discussion may result, and that such a conference may be secured by men devoted to the cause of our country's defence and education, is the earnest wish of the writer.

HEALTH OF CHILDREN AT SCHOOL.

[Although calisthenic exercises are doing much for the welfare of the pupils in many schools, yet much which would conduce to their physical development is left undone. The subject is not likely to be regarded with too much attention. The views here presented are a synopsis of recent articles in the *Herald of Health* and the *Massachusetts Teacher*. They are worthy the consideration of every teacher and parent.—J. W. H. O.]

WHEN Spurzheim was lecturing upon Phrenology, in Boston, the educators in that city took special pains to show him the paraphernalia used in the Public Schools. After viewing them, he remarked that "the best schoolhouse they had was the Common, where the young could get fresh air, vigorous exercise, and an acquaintance with nature." Much as Bostonians respected the claims of this noble man, his remark was not turned to any practical account by making more Commons, nor by turning the youth of the schools into their already ample one, every day, to become educated in body. The old course was held, and intellectual cramming is now practiced. It is a question whether the public schools of Boston are not doing more harm than good, by killing the bodies of the youth, or so warping them that they make only common-place persons when grown to maturity.

The paleness and ghostliness of the faces of the children, especially in the Girls' Schools, is notable. Such ought not to be the appearance of children; especially of girls between the ages of ten and sixteen. At that age the body, the mind, and the character are forming; and they cannot be brought to a vigorous, earnest, and happy maturity without perfect health. Children at that age ought to have rosy cheeks, rounded forms, and playful vivacity.

That in some of our schools they do not have such features is owing, doubtless, to many causes over which the teacher has little control;—too much confinement, unwholesome food and bad hours at home, too little exercise in the open air, too little enjoyment of sunshine, which is the great

health-giver, to an unwise and unchristian excitement from the desire to surpass, and to gain medals and diplomas, and lastly, omitting others which will occur to the thoughtful teacher, to too long lessons. This last cause deserves attention, for over this the teacher usually has considerable power.

Long lessons are unfavorable, short lessons are favorable, to health of the body; to health of the mind; to health of the moral nature; to the happiness of childhood.

1. Long lessons are dangerous to the bodily health. When the growth is rapid, it often absorbs the whole strength of the system. A rapidly growing child is incapable of much or long-continued mental exertion. The energies of the whole nature are taken up with growing. While that is the case, plenty of time should be allowed for rest. Sleep should be long and sound; should begin early in the night and be continued until it ceases of itself,—till the system is refreshed. An abundance of healthful food should be taken; and time should be allowed for eating it, and time for digesting. A child with a long lesson to learn out of school, is in danger of waking prematurely, and thus cheating himself out of the sleep which is essential to health. He is in danger of hurrying through his meals and of hastening to his studies immediately after them. He is afraid of lounging in a chair or upon the sofa, or of a lazy stroll in the air or sunshine. The brightest, noblest, most gentle and most gifted person I have ever known, died prematurely and blasted a thousand hopes, merely from being kept hard at study at the age when all the resources of his physical nature should have been allowed to sustain a rapid growth. Few are aware how much should be allowed to the exigencies of nature during this period.

We act as if we were saying, "The body—this perishing piece of clay—is of no great value, in comparison with the mind, the moral nature, the soul." But nature teaches us another lesson. The laws of the bodily health are Nature's laws as really as the laws of mind and soul, and are to be revered as such.

2. Long lessons are dangerous to the

the mind. At no age is the
le of long-continued exertion.
s could not read long without
beginning to wander. When-
scurred, whether at five in the
at nine at night, he immedi-
out and took a walk in the open
e back refreshed, and resumed
pen.

ood, long-continued thought is
little can be learned at a time.
is attempted, that little may
learned. If too much is at-
once, all will be imperfectly
ow, none but exact, clear, per-
ect thoughts are of any value;
ughts the mind of a child is
eceiving only one at once, only
ay. A fact, a principle, a truth,
grasped, makes no deep im-
nd that impression speedily
. The few thoughts that are
the mind while perfectly fresh
is, may remain, and, if often
ecome a part of the mind's
If the lessons are very short,
may be able to retain all the
too long, he will be likely to
of them thoroughly.

ne great object of study is to
of vigorous mental action. If
allowed to act only as long as
igorously, such habits will be
hile, if the mind is forced to
has become weak, and has lost
, it will form habits of feeble
action.

lessons are dangerous to the
e of the child. Every child in
th, physical, moral, and mental,
quisitiveness and curiosity, and
v ideas suited to his condition
progress, with satisfaction and
ad, with proper management,
f feeling may be made habitual.
facts, principles, or truths, of
forced upon the child than he
nd time to receive fully and
perfectly, he becomes wearied
availing effort and pained by
actness of the images pre-
s mind; and truths which, pre-
erly, would have been gratify-
gful, become distasteful and

repulsive. This feeling, daily repeated,
is transferred to the subject of the lessons.
He comes to dislike a study which might
have been a source of enjoyment to him
for his life. This feeling of dislike may
extend itself to the teacher and the
school.

4. *Long lessons are dangerous to the hap-
piness of childhood.* A child growing up
in health and under judicious management,
listens with delight to every story he can
understand. He examines curiously every
object he sees. Every plant, every animal,
every stone, is beautiful to him. He asks
a thousand questions; and if satisfactory
answers are given, he will continue to ask
others, almost without end. Day after day
he likes to hear the same story, and to
handle and examine the same things; and
he continues to do so until he understands
them. Then every new object is a new
source of delight, provided that too many
new objects are not presented on the same
day. To be happy and healthy, he must
be much in the open air, at liberty to go
hither and thither, and to play with—really
to study—what he pleases.

Long lessons are not, however, the only
causes of the paleness and ghostliness of
the children at school, which come within
the teacher's control. Bad air in school-
houses is a most notorious cause of this
condition. We live in proportion as we
breathe, other things being equal. If any
class of persons ought *always* to have pure
air in abundance, it is the pupil at school.
He can get a better lesson in a room full
of pure air than in one filled with foul air.
A teacher should be more careful that his
pupils have this great desideratum, than
that they say twice four are eight, in per-
forming an example in mathematics.

Next to pure air is gymnastic drill or
natural sport. The topmost story of every
schoolhouse having no playground, should
be devoted to the education of the muscles.
The inefficiency and lack of energy in
thousands of youth are caused in part by
confinement. For youth under ten years
of age, three hours' school each day is
enough, unless sport and physical culture
be put upon the same basis as intellectual
skill, when the school may be kept six,
eight, or ten hours daily, without injury.

AN OLD LETTER FROM A YOUNG QUAKER SCHOOLMA

[The following is a literal copy of an old letter in the possession of a well-known clergyman of New Jersey. It is unique in its facetiousness, if not interesting as a historical picture.]

WEST TALLOWFIELD, May 26, 1810.

RESPECTED FRIEND—The long-looked-for period has arrived when to my satisfaction I was to receive thy letter. Thee mentions that thee has been informed that we had some very high blades at school during the last term, which I can insure thee is the truth; for I do suppose there never was a time since the school was opened that there was as much mischief carried on as at the present time. . . . I left the school on the twelfth of May, and went to my father's house. I tarried there but a short time until I undertook a school in the neighborhood of Doe Run, and I am now teaching there. But,

of all professions that this world has known from clowns and cobblers upwards to the throne, from the grave architect of Greece and Rome, down to the framer of a farthing broom, the worst for cure and undeserved abuse, the first in real dignity and use (if skilled to teach and diligent to rule), is the learu'd master of a little school.

And to my sorrow I have found that the fifth line is true, for I have a great deal of care on my mind, and it is so confining that I think the saying of a great man in former times would be applicable. Thus: "O liberty! O sound once delightful to every Roman ear—once sacred, now trampled upon!" But, my dear friend and

fellow-student, I long to see thee reverse face to face. I seem to be without the privilege of society with, and this day I seem more than monly dull. Still the spirit of cheer which I always had, is with me, as to bear me up.

I am teaching school, as I said and a tarnal school it is when I am I do suppose I tire thy patience intend, for all that, to give thee account of my school. In the first I will give thee a general description then an individual description. I about (although I have not counted scholars. The largest is about the Tom Thumb, and the others are smaller. All of them are a few ways advanced in the spelling-book ever, there are none of them but to the letter A, and I believe the first is as far as B. This much I thought per to inform thee of, with respect school in general; now for the individual The first I shall say anything about with no seat in his trowsers, and t in each knee. The second is a ruling little soul, but he is the only one school that has any coat on, and we were making it they had not cloth to put but one sleeve to it. The sleeve was torn off fighting bum The third I shall say nothing about is beyond description, and therefore end.

From thy friend,

THOMAS H

 THE SUN IN A NEW LIGHT.

THE boundless extent of physical science is forcibly illustrated in the study of the sunbeam. What seems more simple than a ray of light? And yet it would require long study to learn all that has been ascertained in relation to it.*

* See, in Scientific American, "New Facts in Relation to the Sunbeam."

First was Newton's discovery, white ray might be split into several and beautiful colors. Then found that the ray was a compound of three elements, light, heat, and the rays—those which produce the effect of the photograph, and effect all other cal actions of the sunbeam. Finally

a few years has come the great discovery that the light produced by burning different substances is not only different in appearance, but when spectra are formed by passing these different kinds of light through a triangular prism, the spectrum of each element is crossed by lines peculiar to itself. Consequently, however far light may travel, it bears in its constitution the evidence of its origin, and thus brings to us from the sun and from the stars a knowledge of the substances glowing there.

Each of the three elements of the sun-beam, light, heat, and the actinic rays, has been subjected to a great number of minute and delicate observations, and many curious facts have been learned in relation to each. Among other things, it has been found that some substances which allow light to pass freely through them are almost wholly impervious to heat.

Professor W. A. Miller, the author of the great work on chemistry, has recently been engaged in ascertaining a similar

series of facts in relation to the actinic rays. He finds that the same law applies to these; bodies which possess an equal power of transmitting the luminous rays vary very much in their power of transmitting the chemical rays. This is an important fact in photography, as the lenses should transmit a large proportion of the actinic rays. Of all the substances examined by Professor Miller, none was found to surpass rock crystal in diactinic power. Water, ice, and white fluorspar rival it, and pure rock-salt approaches it very closely. None of the different varieties of glass transmit rays extending beyond one-fifth or one-sixth the range afforded by quartz. A plate of glass less than 1-100th of an inch in thickness cuts off these rays almost as completely as a plate of twenty times the thickness. The vapor of water transmits the actinic rays freely, although it is extremely impervious to those of heat. Of the liquids examined, water is most diactinic, and next in order alcohol.

THE UNFINISHED PROBLEMS OF THE UNIVERSE.

PROFESSOR MITCHELL'S manner and style cannot be forgotten by any one of the immense audiences which attended the delivery of his famous "Five Popular Lectures on Astronomy." He has fallen a sacrifice upon the altar of his country, and mighty events have convulsed the land. Yet a lively interest is and always will be manifested in the works of the great astronomer. We shall reproduce the final lecture of his series, "The Great Unfinished Problems of the Universe," as taken, with slight modifications, from the Pulpit and Rostrum.*

It was delivered in the Academy of Music, New York city, January 29th, 1859. Previous to the Lecture, a series of resolutions, with reference to the erection of an Astronomical Observatory in Central Park was offered by Prof. Loomis, and seconded in an eloquent speech by Prof. Davies, in the course of which a high tribute of praise

was paid to Professor Mitchell. We here give a part of his Lecture upon that occasion; the remainder shall appear in our next number.

When I stood, some fourteen years ago, said the lecturer, in my own little city before a multitude like the one which I now have the honor of addressing, and there for the first time lifted my voice in behalf of the erection of a noble structure, whose chief ornament should be one of the grandest instruments that science and skill has ever produced, I ventured to make an appeal of this kind: The Old World looks with comparative contempt upon the profound ignorance and inertness of the New. They point to us and say, Yonder is activity, and strength, and power, and vigor, but it is all put forth to grasp the almighty dollar. And when I stood before that great assemblage and said, Let us rescue our country from the stain that is thus resting upon it—let us show to the crowned heads of Europe that free, independent,

*Pulpit and Rostrum, No. 8. Schermerhorn Bancroft & Co., New York and Philadelphia.

republican America can take the lead even in Science itself, the response to my appeal afforded the most gratifying evidence that in the end this grand object would be accomplished. What is the result? A short time after the commencement of the undertaking—and at that day there was scarcely an Observatory in our country—I visited Europe. I went to Munich, the great centre for the construction of these mighty instruments, and there I stood in the presence of the successors of old Fraunhofer and Utzschneider. I said to them, "Your predecessors sold to the Emperor of Russia the great Equatorial Refractor." And why? Simply because they desired that their skill and handiwork, displayed in this masterpiece, should fall into the hands of some profound astronomer, and thus give them a world-wide reputation. "Sell to me," said I, "poor simple republican that I am—and yet one of the nobles of our land—this mighty refractor, equal to almost any other in the world, at cost, in like manner, and I will guarantee that in the next ten years you will get more orders from the United States than from all the other countries of the world together." They would not make the sale on these terms, and yet during that time they have received more orders from this country than from all others, and we have built more Observatories and erected more magnificent instruments than all the world beside. Now, our scientific men stand on the same high platform with those of Europe. Europeans hail us as brothers in this grand and noble crusade against the stars. We are moving on together—a solid phalanx; the watch-towers are rising all over the earth, and the grand cry is, Onward! It is echoed from Observatory to Observatory. The sentinel is everywhere posted, and do you not mean to post one on your rocky heights? I know you do.

I come now to the discussion of the Unfinished Problems of the Universe. This would seem to imply that there are some which are finished; but I know of none such absolutely. I believe that we are now permitted to announce that the great law of universal gravitation reigns throughout our solar system with absolute command and power. I believe that we

can, almost with certainty, announce that its dominion reaches to the fixed stars; and when this is uttered, I think that I have told you all the problems that are finished in the astronomical world.

When we come to the examination of our own system, when we come to inquire whether we have determined the actual and positive movements of the sun, whether we have reached to the precise and critical knowledge of the movements of any planet, whether we are able to predict with absolute precision the place of any one of these revolving worlds, I answer, it has not been done. All we have accomplished is an approximation to perfection. We are moving on from year to year, and every year increases our ability to trace out the movements of these wandering worlds.

Let me exemplify this matter by reference to one single phenomenon. About two hundred years ago, one of those who devoted themselves to the examination of the revolving worlds—one of the followers of old Copernicus—thought he had sufficiently examined the movements of Mercury to predict the fact that it would cross the disc of the sun, and be seen upon the solar surface as a dark round spot. His computations, however, were such that he felt he must give himself a limit of about five days. Think of it—a limit of five days!

Now, as the planet occupies but a few hours in crossing the disc of the sun, if within this time it should happen that the transit should occur in the night, the astronomer would of course lose the opportunity of verifying his prediction. He watched, therefore, during these days with an intensity which you can scarcely comprehend; and at last his eye was greeted, and his heart gladdened, by finding the planet, true to his prediction, upon the disc of the sun.

But another period of eighty or ninety years in the history of Science rolls away. The astronomers of Paris are all deeply interested and excited with the approach of another of these transits of Mercury. Their computations were such that they believed they could rely upon them within—not five days—but five hours of the time. The sun was to rise with Mercury upon his disc.

ing arrived, and, armed with
scopes, they were waiting to verify
calculations; but the clouds inter-
posed between them and the sun, and
so he was utterly and absolutely

They waited and watched,
and clouds would break away and
the long-coveted opportunity of
their computations; but the limit
passed, and the clouds did not dis-
turb length, one after another becom-
ing with the watch, yielded up in
his post, and abandoned the
sun. But one more doubtful of the
more than the others watched on.
There came a little rift in the clouds,
and that chasm he hurriedly sent out
his periscope ray, and there, on the rim of
the sun, the round, black disc of
Mercury, telling him precisely within what
time their computations were in

error was the limit required at that
time, to come down to a later period,
the observatory of which I have had the
direction, so far as the building
and mounting of a single instru-
ment concerned, was completed in

of that year it was announced
that Mercury would again cross the disc of
the sun. It was the first observation I
undertook to make. I had computed
the delicacy in my power the exact
time when the dark planet would touch
the rim of the sun. I had gone
to the observatory, and computed the exact point
on the enormous circumference of the
sun where the contact would take place—
there, the power of this telescope
; that the sun swells out with
enormous magnitude, as to literally
completely cover the whole heavens
from horizon to horizon, could it all be
the field of vision at one view.
At the moment of contact was brought
the field of vision of the tele-
scope. The eventful day arrived, and the
bright and glorious. Not a cloud

stained the deep blue of the heavens. As
the hours rolled by, and the time approach-
ed, there I was, with feelings such as you
can not conceive, understand, or compre-
hend. My assistants were around me,
ready with their chronometers to mark the
moment of contact. I hoped and believed
that our tables and computations were so
accurate that five minutes of time would be
a sufficient limit, and five minutes before
the appointed time I took my place at the
great telescope. There I waited and waited,
until it seemed as if an age had gone. I
called out, "Surely the time has passed—
what of the time?" "Only a single min-
ute!" Second by second, only a minute
had rolled away. It seemed as though
hours had been sweeping slowly by. Again
I took my watch and waited, until again it
seemed as though an age had passed.
"Surely," said I, "the time is gone."
"No—another minute yet." At last I
caught the black disc of the planet just
impinging upon the bright rim of the sun
—in the limits of a minute? No; but
within sixteen seconds of the computed time!

You see, then, the possibility of advance-
ment. This was not my work, but it was
the work of another—Le Verrier. Le
Verrier had taken up the movements of the
planet Mercury, and with a power and pre-
cision of investigation never surpassed had
corrected the previous tables, and reduced
the theory within such limits that it had
now become possible to make these deli-
cate predictions. Do not imagine, how-
ever, that after your great Observatory
shall have been erected, there is nothing to
do. There is every thing yet to do. Re-
duce these sixteen seconds down to the
tenth part of a second of time. Cut it
down, and when you have cut down all
other errors in like manner and proportion,
you will be able to fix the longitude and
latitude of your ships at sea, bearing your
merchandise and precious freight to all the
markets of the habitable globe, and they
will wing their way over the trackless
deep in perfect and absolute safety.

If has different dresses worn,
or modes in wit should take their turn?

Of, leaving what is natural and fit,
The current folly proves the ready wit.

TRUANCY IN NEW YORK.

THE following account of truant children, and the manner of treating them, is derived from the late Report of Mr. N. A. Calkins, the indefatigable Assistant Superintendent of the Public Schools of New York City. Mr. Calkins' suggestions are adapted to any latitude, and his entire report may be read with interest and profit by educators generally.

There are five police officers who are specially detailed to visit the public schools throughout the city, to take the names and residences of such children as the principals have good reason to believe are truants, and then to visit their homes, confer with the parents or guardians of these children, showing them the importance of regular school attendance and the evils of truancy. In many cases this course is found to be all that is required to effect a reformation of the truant pupil. Sometimes it is necessary to arrest a few of these truants and conduct them to school. Others, who have become more confirmed in their evil ways, are committed to the Juvenile Asylum.

During the year 1863 the names and residences of 5,613 children were reported to these officers. On visiting their homes it was ascertained that 1,968 were absent from school for the following reasons: transferred to other schools by their parents; withdrawn from school; kept at home by sickness, poverty, or other reasons; therefore not to be classed as truants. Through the exertions of the officers, 3,092 children were induced to attend school regularly; 159 were arrested and taken to school; 156 confirmed truants were committed to the New York Juvenile Asylum.

During 1864 the names of 4,633 children

were reported to these officers. On visiting their homes it was found that 2,080 were able to assign good reasons for their absence, such as attendance at school, sickness, &c. The homes of 1,000 could not be found. The number of children as reformed and now attending school regularly is 1,750; 83 were arrested and taken to school; 145 of the truants were committed to the Juvenile Asylum and 275 still remain truants.

It is found that these truant officers are diminishing the number of truants from year to year; and if measures could be taken to enable them to carry out a portion of the act of 1853, which relates to the idleness and truancy of those who wander in the streets without lawful occupation, or attendance at school whatever, it would save many from "growing up in ignorance and crime," and thus turning them from the road of vice and crime. To render this law more effective, there should be established a truant-school, where confirmed truants, and those children of the ages of five and fourteen, who are without truant lives, without attending school, might be submitted to a course of discipline and proper instruction. If the desired reformation should be accomplished.

As now the knowledge that police officers are continually searching for truants from school, already exerts a moral influence in deterring from truancy the existence of a truant-school, and the execution of the law against idleness and vagrancy, would induce multitudes now totally neglect all means of education, to avail themselves of the opportunity afforded in our free-schools.

A PERSEVERING INVENTOR.—The Brussels carpets of England are woven on looms invented by an American, and bought of him. Bigelow, an American, went to England to study carpet weaving in the English looms, but English jealousy would

not allow him the opportunity. He invented a piece of carpeting and unrolled it by thread, and then calculated, and invented the machine by which the best carpets of Europe and America are woven.

AMERICAN TIONAL MONTHLY.

JUNE, 1866.

SCHOOL DISCIPLINE.

LINE, school discipline, government,—the words are heard heaving of teachers and school ers, from Maine to Mexico, but istrations are as rare in their ruants at a school excursion.

o scheme of education in which nance of discipline is not an sture; and there is no teacher ot profess to have some kind e in his school. And yet, how l conflicting are the theories ject! Some would maintain strictness among their pupils, literal sense, as proposed by a in this number of the MONTHLY; ld allow the greatest possible nsistent with proper attention

From some schools the rod is hile in others it is considered aring of the rod is the spoiling , and a contempt of Holy Writ condign disciplining of the re-gogue in unexplored torrid

ould be less diversity of opinion means necessary for securing if what the term implies were erstood. With many, discipline ed of no value in itself, and as only in order to keep boys at nce a little noise is not objected upils are only busy with their asks, and sometimes an imper-lar is tolerated because he is quick at figures." Perhaps, the very strict while his pupils are the school hours over, the boys ild. It is thought that children readily submit to order and when in school, from having had way when out. But it requires d to rule high-spirited youths,

alternately checked and indulged, turbulent as fiery steeds; and as this notion of discipline is a very common one, it is no wonder that many teachers fail.

To us, however, it seems that to consider discipline as only a means to an end, and as altogether subordinate to instruction, is to take too narrow a view of it. We regard it as "moral training" and think it should consist essentially in the formation of good habits. Such a view of it would render our efforts toward its attainment more intelligent and effective, while to train children to habits of punctuality, neatness, obedience, and quiet industry, is to them, at least, as valuable as any amount of mere instruction we can impart. Much of the knowledge gained at school is lost more rapidly than acquired, but habits formed there cling to a man through life.

It may be urged that the importance of moral training is no new idea; that in all good schools attention is already given to it. This we readily admit; but too often this training is confined to mere instruction in moral duties, without due regard being paid to the practice of them; and again—and this is more to our present purpose—this moral training is considered as entirely distinct from discipline properly so called. When a boy is punished for any breach of discipline, the reason generally is, that if such delinquencies were allowed, the work of the school could not go on properly. But it would be acting upon a higher principle if the master considered, not so much the effect of the fault upon the working of the school as upon the boy's own character. This is the principle which, we contend, should regulate all rewards and punishments: the improvement of each boy's individual character. Occasionally, a boy will prove incorrigible; expulsion is then the best thing; but these are exceptional cases. As a rule, children will yield to the force of habit, and will in time grow to love the ways which were once irksome to them. The stream, guided at first in its course, will gradually wear for itself a channel in which to flow.

We shall perhaps best illustrate that view of discipline which we have endeavored to explain, by noticing some of its results. In the first place, it will check impatience on the part of the teacher. A young teacher often enters upon his duties with the greatest enthusiasm. He perhaps knows that his pupils are ignorant, rude, and disobedient; but he thinks there is the greater room for improvement—the greater honor to be won in reclaiming them. For a while he labors earnestly; he points out the attractiveness of virtue, the odious nature of vice, and often is pleased with the answers received, and some good impression seems to have been made. But, there is little improvement in conduct; some flagrant act of disobedience or wrong is committed, and all his labor appears to have been in vain. He grows disheartened; he thinks there is something peculiarly vicious in the class of children amongst whom he has been thrown; or, if he is of a timid character, he may begin to doubt his fitness for his profession. But let such teachers clearly understand the nature of the work in which they are engaged, and half their doubts vanish. They should recollect that, in many cases, their pupils have long been accustomed to bad habits, and although they may very willingly assent to all their teacher tells them, still it requires time to overcome those habits. They may speak according to their “infused opinions,” but they will act as they have been accustomed to do. But if bad habits exist, good ones may be formed. It is perhaps a work of time, yet the longer the process, the better it is done. A few characters may easily be traced on sand; the next wave obliterates them. A word engraven in a rock remains for ages.

As the discipline for which we contend depends on the formation of habits, it matters comparatively little whether a teacher's manner is kind or severe, provided he is firm and consistent. Much will depend on his own character, and to expect every one to adopt the same means

in maintaining discipline, is to end fit them all to the bed of Procrustes.

But not only will the methods of maintaining discipline depend very much on the character of the teacher, they at least they ought to vary with the characters of the children. A kind man sometimes be imposed upon, and the rigidity of an indulgent master set at naught. On the other hand, if the reins are kept tight, fear, on the part of the pupils, produce hypocrisy; or perhaps a spirited lad whom a kind word would have gained, is driven by harshness into rebellion.

One rule, however, must be observed by all who wish to bring about a good tone in the school—whatever is once given must be obeyed; whatever is once bidden must never be allowed. In really bad disciplinarians, therefore, those teachers whose characters are so changeable that they are never in the same mood two days. For habits are formed by repetition and if by firmness an impression is made one day, and then effaced through leniency the next, no progress can be made and the children become irritated. This fickleness of character in teachers is far from being uncommon. It may arise either from weakness of mind or infirmity of temper. All Goldsmith's Village Schoolmaster-
“Well had the boding trembler learned
The day's disasters in his morning fears,
And there are not wanting examples
These days, of teachers whose treatment
Their scholars depends very much
Way the world treats themselves
Course under such circumstances
Can be no moral training.

The notion of discipline for which we contend, will lead us to understand the system of rewards as a means of inducing discipline—concerning the effect of which there are great differences of opinion—might become a very important means of good. It is true that to work steadily in hope of a reward

led by the highest motives, but in mean time a good habit is acquired. In high life, men are constantly being led from certain things through fear, punishment, and led to do others in hope of reward; and why should it be the case in the little world of ? Of course we do not lose sight of the fact that, in themselves, actions are good or bad, according to the motive which prompts them; but what we wish to impress upon our readers is, that how good the motive, the practice will be defective unless strengthened by

each teacher intends to establish real discipline in his school, which shall not be surface work, but shall elevate the mind. One of his scholars, he will begin endeavoring to implant among them good habits; and this he will accomplish, not lightly, but firmly, inducing them to do, day by day, what is right for them. For, ultimately, whatever may be the opinions, or even professions, they hold, what they have been accustomed

THE POLITICAL FORCE OF IDEAS.

It may truly be said of most modern nations, that their national characters have been formed on the model of some master mind. The quiet, grave irony which is more or less visible in every nation who comes to our schools for instruction. The breath of Voltaire blew a rumbling ruin the State Church of England, and, on his cold, sarcastic, searching political writings have been formed the minds of many of the most eminent of our nation's later philosophers and statesmen. It is a question well worthy of discussion whether Great Britain is not more loyal for her present position to the "poet" of Shakspeare than to the "inventor" of Watt. Our opinion is, that, in the end, the poet would conquer the inventor.

The student of history, who looks into the annals of great events, often traces

them beyond the mere will of the ruler who ordained them, to the impelling force of previous "national ideas." The preaching of Peter, the hermit, sent half Christianity to Palestine. The Catholic Church would not have fallen before the act of Henry VIII. had not the ballad writers of the fifteenth century, by their ridicule of the vices of its clergy, previously prepared the minds of the people to welcome the Reformation. Ferdinand of Spain was so convinced of the force of ideas, that he forbade the Moorish song on the fall of "Alhama" to be sung by the Spanish soldiery, decreeing the penalty of death to any offender. In our own country we are probably indebted to one determined will for the war which is now raging in our midst.

Such being the force of ideas, do we not too much neglect in our public schools the cultivation and training of the faculty of imagination? Do we not lay too much stress on proficiency in the strict sciences alone, in our examinations of teachers for qualification and advancement? The mathematician who attains a certain result step by step, has rarely that free, fanciful, yet comprehensive mind which can throw light upon a subject by a sentence, and to which the past is an open book of reference! On this point we would do well to receive instruction from nature herself, from the lips of mothers! Their nursery ballads are almost all extravagant fictions. A rhythmical multiplication table will not answer for either mother or child.

Is it true, then, as even some philosophers teach, that utilitarianism is the chief end of human life? Is not the practical materialism of the age itself, largely indebted for its success to the ideas of the philosopher Lord Bacon? Who can say that the actual is not as visionary as the ideal? We can find the answer in the words of the bard of Avon:

"The great globe itself,
 . . . shall dissolve
And like the baseless fabric of a vision
Leave not a rack behind. *We are such stuff
As dreams are made of,—and our little life
Is rounded with a sleep!*"

THE GOVERNMENT OF THE REPUBLIC.

A NEW BOOK.

IN January, under the caption "A Book Wanted," we stated that our schools needed a textbook, which, in plain and simple language, should fully explain the nature of the government under which we live, the relations of the state to the people, the powers and duties of the federal government, and of those great municipalities which form the Union.

A number of our leading statesmen and jurists, improving upon this suggestion, have resolved to do all in their power to put this kind of information, not only in the hands of the pupils in our schools, but also in the hands of every American citizen at the domestic fireside. They believe that the permanence of our institutions will depend, in a great measure, upon the intelligence of the masses of the people in reference to their rights and duties as citizens. Proceeding to carry their resolution into effect, they have addressed a letter to Prof. W. B. Wedgwood, LL. D., in which they state that there is an increasing demand among all classes, in our own and other countries, for some reliable work which shall give a clear, comprehensive and accurate knowledge of the construction and operations of our system of government. They say that there is no work which contains this information in such form as to be accessible to the great mass of the people; they express their full confidence in the ability of the learned profes-

sor to prepare such a work as they suggest, and they extend to him an invitation to undertake its accomplishment. He has accepted the invitation, and will speedily assume the task assigned him.

Prof. Wedgwood began his legal studies after completing the college routine, and was admitted to the bar when the rules of our courts required the student to study three full years after graduation before they could be admitted.

Soon after entering his profession he made an extensive and successful effort to disseminate a knowledge of our constitution and laws among the masses of the people in all parts of our country, in which he received the unqualified approbation of the leading jurists in the several states. He prepared and published more than three thousand pages of law matter, some of which sold to the extent of over one hundred thousand copies. The degree of doctor of laws was conferred upon him by Rutgers College, under the administration of the late Hon. Theodore Frelinghuysen, and he held the position of principal professor in the law school of the University of New York for six years, resigning this position a year ago. As a scholar, as a teacher, and as an author, Prof. Wedgwood has manifested qualities which show the appropriateness of the labor in which he is about to engage. We feel fully warranted in expressing the conviction that it will be successfully prosecuted.

EDITORIAL CORRESPONDENCE.

BRITISH MUSEUM LIBRARY, }
LONDON, May 13, 1865. }

New Reading Room—Model Catalogue—Availability—Number and Character of Readers—Plan and Arrangement of the Room—Miles of Books.

SITTING in the magnificent hall which the British nation opens with generous hospitality to students not of her own domain alone, but of all nations, I am tempted

to write to the EDUCATIONAL MONTHLY on the subject which here seems the most near and suggestive—the New Reading Room of the British Museum. Here I have worked every day for nearly three months, so closely engaged in my preparation to edit Ritter's work on the Holy Land, that I have visited not a single school in London, nor put myself in the way of meeting with any educators, as my leisure in Ed-
u-

ply allowed me to do. I can-
a, write what would be called
onal" letter, but this Library
greatest educational powers
and the arrangements which
r the use of students are so
admirable, that it seems wrong
interesting a theme.

cessary to remind the reader
a word, that the Library of
fuseum is one of the largest in
umbering over half a million
oks, besides pamphlets, manu-
the like, which are literally
The number is so vast that
been computed. The number
the catalogue alone is 1150,
being in manuscript, and the
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full name, you can look up a
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atican is well-nigh worthless:
entombed in a little wooden
and very few are allowed to
s. And it is more or less the
the public libraries of the Con-
re so hedged in with restric-
a cannot use them as you can
lection of books on your own
it is not so here. The British
rary is as open and as free as
eaven. It is placed at the dis-
eople of all the nations; every

n, and while you are there
the morning to four in the
u fare like a prince, so sump-
accommodations for students,
he service of the attendants.
ut it costs the people of Eng-
illion of gold dollars yearly to
id peer and peasant are alike
joy its advantages. The only
d is, are you twenty-one years
e, go through the form of get-
, and bask in the ample fields
And yet free as it is, it is not
here are accommodations for
ed "readers" at once, but I

have never seen every table full. And you
might think too that people might come
here to lounge, to read novels, to trifle
with literature. But they do not. Open
as it is, these men at my side are the
Authors of England. I do not scrutinize
the works of my neighbors. To do that
were most unmannerly; but I cannot help
seeing that those who come and sit down
to work by my side are hardworking men,
engaged in the most recondite paths of lit-
erature; many orientalists are to be seen;
many evidently engaged in historical re-
searches; many in hunting up out-of-the-
way geographical details, some prosecuting
recondite researches in the province of
literature proper, but never have I seen
a man here who seemed to come with triv-
ial motives, or who was not a genuine
scholar. And they have one good rule
which acts as an excellent safeguard. The
current magazines are not issued till they
are bound, and novels can not be taken
out till they have been published a
year. That rule keeps away the thousands
who are foolishly rushing after the latest
births of the press. And this is most ex-
cellently planned, for the chairs, the desks,
the heating apparatus are so sumptuous
and luxurious, that were it not for this rule
the New Reading Room would be the
greatest resort for loungers in London.

This room, which, with all its appoint-
ments, cost the British nation \$450,000 in
solid gold, is so simple in its main outlines
that I will venture to describe it. It is an
enormous dome, a hundred feet in height
and a hundred and forty in diameter—one
foot more than St. Peter's in Rome, twenty-
eight feet more than St. Paul's in London,
and only two less than that of the Pantheon
of Rome, the vastest in the world. Book-
cases line its circumference, up to a height
of thirty feet, where the great windows
begin, which give it light. The bookcases
in this room alone accommodate 80,000
volumes; the others are in the adjoining
buildings.

Now fancy this great circle of four hun-
dred and twenty feet circumference. At
its center is a slightly-elevated circular
dais, where the attendants sit, and whence
books are distributed to all the tables,
which radiate, like the spokes of a wheel,
towards the sides of the room. Imme-
diately around the central dais are the two
concentric tables, broken at convenient
places for passage through, where stands
the vast array of catalogues—those two
thousand folio volumes of which I spoke.
Each of the long tables for readers accom-
modates fourteen persons, giving five feet
to a person. I can not look across my table
for a screen three feet high, running the

whole length, forming what may be called the backbone of the structure. In this screen or partition are inserted my ink-stand, penholder, and two ingenious adjustable racks for holding large books. Nor is this all the function of this screen; it is not a single piece of plank; it is hollow, and measures six inches through it; the top is covered with wire netting, and through it a steady, equable current of warm air is poured into the room. Was ever device so admirable? Nor is this all. Under the table runs a tube at a convenient distance from the feet, filled with warm water; this helps to warm the room, and may be a foot-warmer if I choose to use it as such. The tables are covered with enameled leather; the chairs are leather-covered, ample in size and models of their kind. In a drying-room outside, the porter carefully deposits your coat and umbrella; waiters come and go, discharging every service you may wish. A dining-room is just below, where for six pence you may have a generous slice of roast beef, and where a shilling pays for beef, potatoes, and pudding. The books in the reading-room, which can be reached from the floor, can be taken down without ceremony; for others you must send the attendants. In one word, the whole affair is as near perfect as anything in this world can be. I have at times tried to think what the most confirmed grumbler would find here to exercise his gift upon, and as yet I have failed. Here I break this letter off to go and ask a friend if he ever saw a man who could find a fault with the arrangements of the New Reading Room. "Oh, yes," he said. "And what was it, pray?" "Oh, some think that it takes too long to get the books." Well, I suppose there is a chance for grumblers there, for sometimes one must wait twenty minutes for a book, and I have known them to be half an hour; but that is the unavoidable result of the vastness of the collection. You can not walk ten miles in less than two hours and a half, however excellent,—however costly the boots you wear, or the roads you traverse. You can not find one book in this

enormous collection, in a moment. There are twenty-five miles of shelves in the reading-room alone, and yet here are only 80,000 volumes—not a sixth part of the whole collection!

It would be impossible in the course of a single letter to go into some of the minor excellencies of this perfected work. I say minor, not meaning it, but only referring to what is less striking. The same ingenuity, the same skill, the same honest use of money is apparent in the new bookshelves which the readers' tables show. Take for instance this paragraph:

The shelves are formed of iron galvanized plates, edged with wainscot, and covered with russet hide leather, and having a bookfall attached. They are fitted at each end with galvanized iron, leather covered, and wadded pads placed next the skeleton bookcase framing, to prevent injury to the binding, when the books are taken out or replaced. Between these pads the skeleton framing of the cases forms an aperture by which a current of air may pass, and ventilation be kept up throughout. The shelves rest upon brass pins, the holes for which are pierced at three quarters of an inch apart, from centre to centre; but by a contrivance in crooking the shaft of the pin, which may be turned upwards or downwards, this interval is practically halved, and the position of the shelves may be altered three-eighths of an inch at a time. There are 2,750,000 of these holes."

These are not pine-wood bookcases exactly.

But this must do. I should like to tell of the ventilation, of the Kamptulcan floor, looking like leather, and giving no sound back to the tread. I never saw such a place to study. There is no noise, all are hard at work, the atmosphere is one which stimulates to thought, and to industry, and to noble achievement. England had done many, many noble things, but surely she has never done one more worthy of her wealth, her culture, and her civilization, than the establishment of this princely library.

W. L. G.

MISCELLANY.

—The Egyptian Chronology, which has led so many Egyptian scholars, such as Bunsen and Lepsius, to put back the date of creation indefinitely, is likely to be brought within reasonable limits. M. Mariette, a distinguished French explorer, has discovered a tablet in a disintombed

temple at Memphis, with a long record of royal names. It places in direct succession kings of the fifth and tenth dynasties, and the twelfth and eighteenth, omitting all the intermediate ones, like the tablet of Abydos. M. Mariette confesses that it seems to prove that the intermediate ones must have been

neous monarchs, or kings of Egypt, and that this deducts from the supposed duration of an kingdom. As he has been an of the long chronology, this adds great weight.

he preparation and purification um, mixed solutions of chloride um and chloride of magnesium ated to dryness, and thus a non-ouble salt is obtained, which, ed with soda in an iron crucible, quantities of magnesium. It rified (though for photographic his would be superfluous, and e cost of production considerable in an iron apparatus hydrogen.

ch sugar has been converted et, hard, granular condition, in sembles ordinary sugars, by Mr.

f. Hoffman has patented in Eng-rocess of manufacturing a new ined from iodine, which affords ieties of violet.

hort time since a paper was read ety of Antiquaries upon an an- us, which had been, after much lecliplered. It is a story of 300 ng the adventures of an Asiatic about B. C. 2400. This person he court of King Ammenemoo iopia, where he is hospitably l, marries the daughter of a becomes a rich man. In his old gs to return to Egypt, and writes ; for pardon. The King returns answer, and a copy of his letter

The adventurer describes his Egypt; the awe with which the sence inspired him; the mis- of the courtiers, who fancying ing is about to punish the fugi- at that he is guilty; the turning es by the King, who pronounces ent, instals him in a splendid a handsome pension, continues on him till the day of his death, him a magnificent tomb.

ut fifteen years ago, it happened i country of Europe, that the in- eral of garrisons, while visiting l town, observed a sentinel sta- little distance outside the walls, and over some ruined buildings urbs. The general inquired of l with some curiosity, why he d there. The sentinel referred s sergeant. The sergeant had say but that such were the or- lieutenant. The lieutenant jus-

tified himself under the authority of the captain-commandant of the garrison for the standing order in question, the commandant informed the inspector-general, with much seriousness, that his predecessor in office had handed down to him the custom as one of the military duties of the place. A search was immediately instituted in the archives of the municipality, the result of which was to obtain satisfactory proof that, for the last seventy years, a sentinel had always stood over the ruined buildings in the same manner. With awakened interest and curiosity, the general returned to the capital. He there set on foot a more elaborate investigation among the State documents of the minister of war. After long delay it was at last discovered that the ruined building of the faubourg had been, in 1720, a storehouse for mattresses belonging to the garrison, and that in the course of that summer it became desirable to repaint the door. While the paint was wet, a guard was placed outside to warn those who went in and out; but before the paint was dry, it came to pass that the officer on duty was dispatched on a mission of importance, and left the town without remembering to remove the sentinel. For a hundred and thirty years a guard of honor has constantly remained over the door—a sacred and inviolable tradition, but one which represented at bottom no higher idea than the idea of wet paint.

— A natural curiosity, which completely puzzles naturalists and geologists, is now in possession of Isaac S. Josephi, the wholesale jeweler on Washington street, San Francisco. It is an irregular hexagonal quartz crystal, about one inch in diameter and two inches in length, pointed at one end and broken squarely off at the base. Within the body of the crystal, rising from the base like a miniature mountain, and occupying about half the entire length of the stone, is a mass of beautifully crystalized gold, silver and copper, each metal distinctly defined, and all embedded in the stone—which is as clear as glass—in exactly the style of the flowers and other objects in a glass paper-weight. This curious specimen of the handiwork of nature was found by a miner at Gold Gulch, Calaveras county, some four years ago, and has been carried around in his pocket ever since, until some two months ago, when it was purchased by the superintendent of a copper mine, and sent to the present possessor as a curiosity. Geologists who have examined it declare that nothing of the kind has ever been seen or heard of before, and are utterly at a loss to account for its formation.

— The smallest natural magnet generally possesses the greatest proportion of attractive power. The magnet worn by Sir Isaac Newton in his ring weighed only three grains; yet it was able to take up 746 grains, or nearly 250 times its own weight, whereas magnets weighing above two pounds seldom lift more than five or six times their own weight. Iron is the only substance principally attracted by the magnet. The degree of magnetic attraction depends on the strength of the magnet itself, the weight and shape of the iron presented to it, the magnetic or unmagnetic state of the body, and the distance between them. All iron bars standing erect or fixed perpendicularly (such as the iron railings before houses) are magnetic, the north pole being at the bottom and the south at the top. It is also a curious fact that the uppermost part of the iron ring round a carriage wheel attracts the north end of the magnet, and is consequently a south pole, while the lower

part of the same iron, in contact with the ground, attracts the south end of the needle, and is therefore a north pole. Turn the wheel round half a circle, and the poles immediately become reversed. The power of magnetic attraction resides wholly in the surface of the iron bodies, and is independent of the mass. An empty bombshell will attract as strongly as a solid sphere of the same material. The cutters in gun-boring become magnetic in consequence of being continually rubbed in the same direction.

— The French journals report that M. Gaunal has succeeded in obtaining crystals having all the properties of diamonds, through the mutual reaction of phosphorus, water and bisulphid of carbon, on each other, for the space of fifteen weeks. The crystals were found to be so hard that no pick was capable of acting on them; they cut glass like ordinary diamonds, and scratch the hardest steel; in brilliancy and transparency they equal the best jewels.

CURRENT PUBLICATIONS.

MANY persons regard Latin as an irksome study having little remunerating value. Latin, nevertheless, has important advantages in education; it is, not only a most excellent training for memory, but is the very best exposition of the general principles of grammar, illustrating the inflections of words, and the nice shades of thought, developed by prefixes and terminations; and it gives an anerring key to the meanings of those more elegant and expressive terms used by our best writers. Words derived from the Latin add to the Anglo-Saxon a richness and delicacy of expression that all scholars appreciate, and they now form a much larger proportion of our language than those not familiar with the classics would suppose. Education is thus imperfect without some knowledge of this language and its derived words.

But while these advantages of Latin are admitted, the irksomeness of its primary studies must be also, particularly in the old systems of teaching it, in which students were kept for months poring over a Latin grammar, without the facilities of seeing or applying the principles explained. A decided improvement in this respect took place when "First Books" in Latin appeared, combining grammar, reading and translation in each lesson. But the "Latin Readers" and the "First Reading"

books still have defects—in the monotonous character of the pieces, or the incongruous selections from various writers, apparently taken at random—detached sentences that awaken no interest, or paragraphs which change from one subject to another without finishing any; and in the books of modern times, as *Historia Sacra*, *Viri Romæ*, the style is so dull and staid that students seldom feel their interest so much excited in the narrative as to pursue it with zest. In reading the new work of Professor Brooks,¹ of Baltimore—the *Viri America*, the reader, therefore, cannot fail to be struck with the difference in the style between it and the first Latin books of his boyhood days. Opening the book at random, we find from "JOANNES PAVLUS JONKA," p. 120, the following spirited scene:

"Dum naves appropinquant, frequentia spectantium magna, studio summo, implet caput Flumiboroughense. Dies vesperscit, sol descendit et, crepusculo in noctem tenebrascens, luna, orbe pleno surgens, radios argenteos diffundit. Subito supra pontum rubescit fulgor, ac reboant tonitrua, dum coeunt naves hostiles in primo congressu. Tormenta, toto latere, ex ordine celeriter emittuntur, exoriturque clamor virorum fragorque scelopetorum.

"Pugna desævit; quaque emissionem tormentorum tigna dilacerantur, fissuræque per corpora navium aperiuntur, ruuntque undæ per for-

(2) BROOKS' *VIRI ILLUSTRIS AMERICÆ*. New York; Barnes & Burr. Price \$1.50.

que sanguis super stegas lubricas, involuti nantes depressantur sub m. Decies ardet Richardus, decies guntur; interdum instat videre, si levatus sit; sed usque præfectus prælium sustinet. Tandem Serapis aminæque circa malos ad cælum ruscantque crepitantque; ubi navæ et marte subactus, victorem lumque submittit.

it, navis Richardus jacuit collapsa rforata, inflammata ac prope deliem et noctem sustentata est; sed olutata ab undis, in momentum inumque ab mari hausta est cum notis, qui super stegas perierant. feretrum melius aut sepulcrum

is is a fire, a graphicness in tion of the rencounter, that the young and the old. True, f good old Cicero and Horace plexed about the exact modern such words as *tormenta, sclo-*, but the style can not fail to make students delighted with ng, and encourage them on- ill the Latin first-reading had nce, we would hear but little f its irksomeness.

g the book more fully, we find resting feature. It embraces he prominent men of America, > Andrew Jackson, arranged in al order, and thus forms, as it graphical history of the coun-; the study of the "*Viri Ame-* ot fail to impress the memory incipal events in our history, ie the heart with enobling sen- patriotism and virtue. This is, al of the peculiar characteristics cal works of Professor Brooks, re remember, in his Cæsar and ate reviewer of these works "Professor Brooks strives to y of the text of his author, by t the literary beauties, and by parallelisms from our own lite- he Bible. He would develop, re verbal or grammatical util- e cultivate the taste and the e of classical study." This,

no small advantage of Latin ine for the minds of children. shop Meade, in his great work ble and the Classics," says: eachers of youth, and editors of had but followed [this] example, al education, instead of minis- pticism and immorality, would e useful handmaid to Christian- and mathematics are admirably form a well-balanced mind. owever, better suited to some generally and more especially, s of females.

A new edition of a teacher's manual² has appeared. It is not a book of much labor or erudition. The teacher's vocation, means of professional improvement, oral teaching, object lessons, school examinations and exhibitions, and similar topics, are treated in the form of letters, in plain, intelligible language. No new system and few new ideas are advanced, and the experienced teacher would find little of practical importance. To many persons, however, it would be interesting, and would perhaps be more useful than some pretentious and labored treatise.

Cleveland's *Compendium* of English Literature was given to the public several years ago, and has been too extensively used and too well appreciated to require special praise. And as the proprietors of the MONTHLY now issue the valuable series to which it belongs, we are tempted to pass the book with stinted approbation, as we have often done under similar circumstances, knowing that in commending our publishers we might seem to be patting ourselves on the head. But the works of Charles D. Cleveland are really too meritorious to be slighted on such considerations. The *Compendium* in its improved form is really a remarkable book. Solid, voluminous, and carefully compiled at first, the additions and revision have made it the best collection of the kind which has been prepared. Few who have had no experience in bookmaking can form an approximate estimate of the time and labor necessarily expended on the work. The selections are in prose and in poetry, illustrating the principal writers of five centuries, and are annotated, indexed, and arranged with the conscientious accuracy which distinguishes the author. Unusual pains have been taken in the typographical execution of the work, and it is issued in the neat, handsome and durable form which it merits.

The Teacher's work would prove far pleasanter were his pupils properly trained at home, from their infancy. Warren Burton's new book on the "Observing Facul-

(2) THE TEACHER'S ASSISTANT, or Hints and Methods in School Discipline and Instruction; being a series of familiar letters to one entering upon the teacher's work. By CHARLES NORTHEND, A. M., author of "The Teacher and Parent," etc. Boston: Crosby & Answorth. 12mo, pp. 353; \$1.75.

(3) COMPENDIUM OF ENGLISH LITERATURE. Chronologically Arranged, from Sir John Mandeville to William Cowper. Consisting of Biographical Sketches of the authors, selections from their Works, with Notes, explanatory and illustrative, directing to the best editions, and to various criticisms. Designed as a textbook for the highest classes in schools, and for junior classes in colleges, as well as for private reading. By CHARLES D. CLEVELAND. New York and Philadelphia: Scheimerborn, Bancroft & Co. 12mo, pp. 776; \$2.50.

ties" happily shows what can and ought to be done at home, and how it should be done. Those parents who properly encourage the child's first cravings after knowledge are really exercising tutorships and professorships as important as any in our colleges. Mr. Burton's book⁴ contains less than two hundred pages, and yet we know no work so rich in valuable hints and suggestions. We are not given to the use of strong terms in praising books, but we can not avoid insisting that every parent and teacher should own and study this little volume. Its universal use could not fail to be of inestimable advantage.

We have had many works professing to contain valuable information concerning methods of instruction. Too many of these have been of inferior character and only a few have been sufficiently thorough or practical. It, therefore, gives us real pleasure to receive the long promised work of Prof. Wickersham,⁵ in which we recognize a nearer approach to a properly scientific treatment of the various questions. The introduction, containing 100 pages, is elaborately written and full of facts alike interesting and important. In this portion of the work the author makes some strong points while urging that teachers need special preparation for their calling. He regards teaching, as a profession, equal in importance to those of medicine, law, and theology, and shows that its object is to impart instruction not merely that the pupil may acquire means to feed or clothe himself, but also that he may be made more useful to his fellow men. Having established the importance of the profession he insists, with great propriety, on the necessity for special preparatory schools, and fortifies his position by references to the teachers of Prussia, France, and Great Britain. We regret that our limited space will not permit us to carefully discuss the merits of this work. It is characterized by wonderful unity of purpose and completeness of plan. No branch of study seems to have been overlooked; for instruction in each, some method is given. The whole treatise gives evidence of careful preparation. The style is very concise. By those who have the honor of the profession at heart and who desire to be faithful in discharging their duties toward the pupil, this

work will be welcomed more than any similar treatise which has ap-

Our clerical friend, the Vicar of Wakefield, will never grow old. We had a half-hour's chat with him, him as genial and loquacious a quarter of a century ago, we accidentally, through him, that the "... of the world had puzzled people of all ages," and that "Sancho Panza, Berosus, and Ocellus Lucanus attempted it in vain." The Vicar, it is clad in dark vellum cloth appearance is altogether unexcep-

The Phonological publication: Fowler & Wells have long been throughout our country, and it is he said, throughout the world several years they have directed attention, not only to subjects of nature, but to various practical topics. Of these the Handbook of Improvement⁶ is most directly with educational matters. It was many persons that a book should write, how to talk, how to be how to do business, is, in this day, a little behind the age. So do not reflect that the world is every thirty years, and that a years hence there will be myriads blundering with their A B C. who have had little opportunity of systematic study, the Handbook, so inartistic as it is in execution, is both interesting and serviceable.

The Pulpit and Rostrum⁷ comes present from time to time the interesting productions of the literary leaders of our eventful age to no restricted range of thought reflex of the most gifted minds embracing popular action. The latest of the series contains the Orations of George Bancroft, at the Obsequies of the late President; the Funeral Oration; the Emancipation Proclamation; the Inaugural Address of Mr. Lincoln. Accompanying these is a well and remarkably accurate engraving of the lamented President, forming a contrast to the rude portraits which time everywhere meet the eye.

(4) *THE CULTURE OF THE OBSERVING FACULTIES IN THE FAMILY AND THE SCHOOL; OR, THINGS ABOUT HOME, AND HOW TO MAKE THEM INSTRUCTIVE TO THE YOUNG.* By WARREN BURTON, Author of "The District School as it Was," etc. New York: Harper & Brothers. 75 cents.

(5) *METHODS OF INSTRUCTION; that part of the Philosophy which treats of the nature of the several branches of knowledge, and the methods of teaching them according to that nature.* By JAMES FRYE WICKERSHAM, A. M., Principal Penn. State Normal School, etc. Philadelphia, J. B. Lippincott & Co. 12mo; \$1.75.

(6) *THE VICAR OF WAKEFIELD.* By OLIVER WELLS. New York: Frank H. Dodd. Pocket ed pp. 242; \$1.50.

(7) *HANDBOOK FOR HOME IMPROVEMENT, or, How to Write, How to Talk, How to Behave in Business.* New York: Fowler & Wells. \$2.25.

(8) *THE PULPIT AND ROSTRUM; Pamphlet 8vo. Orations, Popular Lectures, etc.; No. 1. Obsequies of the late President.* New York: George H. Barnard & Co. With Portrait, 25 c.

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HOW SHALL WE TEACH GEOGRAPHY?

III.

LESSONS ABOUT HOME.

I. Physical Forms.—The lessons on the home neighborhood, spoken of in the preceding article of this series, must necessarily be *oral*. Teachers accustomed to give oral lessons, and familiar with the principles to be observed in their preparation, will need no aids in the preparation of these lessons on the physical features of the neighborhood in which their pupils live. Many teachers, however, will perhaps find the following report of a lesson on a neighborhood in Western New York of assistance, as suggesting, better than any set of directions could do, the method of proceeding. The pupils are the children of the farmers of the neighborhood, and the time summer.

Teacher. I would like all of you to think carefully a moment, and try to remember everything you saw on your way to school. (Several hands are raised, and the pupils, one after another, are called on to state what they saw.)

John. I saw some men mowing in Mr. B.'s meadow.

Charles. I saw a red squirrel running along the fence by the woods.

Mary. I saw some cows and a colt, and two calves, and some sheep and lambs, in Mr. G.'s pasture.

Fanny. I saw some cherries that are turning red in the orchard across the road.

T. You have remembered several things, and I have no doubt if you should think a little longer you could name many more;

but we have as many as we can talk about in one morning. We are going to have a lesson on some of the things you have seen in coming to school. Mary spoke of something she saw in a *pasture*. How many passed pastures in coming to school? (Hands raised.) Mary, can you tell me what a pasture is?

Mary. It is a field where the cattle, horses and sheep stay.

T. Why are they in the pasture?

Mary. We drive them there to eat the grass.

T. Do they need anything but food during the day?

Children. They want drink too.

T. Very well. Where do they find drink?

James. There is a creek in our pasture.

Sarah. There is a spring in ours.

T. (Charles's hand is raised.) Well, Charles, what is it?

Chas. I saw a big crab in the creek when I was coming to school.

T. I thought somebody would remember presently that there is a creek to be passed on the way to school. I am glad Charles has thought of it, though it seems he thought most of the crab. I want to talk of the creek presently. Sarah may tell us first what she means by a *spring*.

Sarah. It is a place where the water comes out of the ground.

T. Has any one else seen a spring? (Hands raised.) Can Charles tell me anything more about a spring?

Chas. There is a creek running from our spring.

T. James says there is a creek in his pasture.

Chas. (Interrupting.) That's the very same creek that goes from our spring.

T. Now will one of you tell me what a creek is, or how it is different from a spring, since both are water?

James. The creek is where the water runs along through the fields, but the spring is just the place where it comes out of the ground.

T. Does the water run, James? Can't you think of a better word?

James. It flows.

T. That is better. Now I should not say that a creek is *where* the water flows through the fields, but *is water flowing through the fields*. Can any one give me another name for a creek?

Fanny. Some people call it a brook.

T. I like that name better, though most people about here say *creek* instead of brook. Can any one tell me where the little brook that flows through the pasture goes?

George. It goes into the big creek that makes our mill-pond?

Chas. That's Salmon Creek.

T. Does any one know of any other brooks that flow into the "big creek" as George calls it? (Several are named.) Now can any one give me another name than creek for this large stream of water that has so many brooks flowing into it?

Susan. Johnny Brown called it a river. He lives in Albany, and he said there was a river there big enough for ships and steamboats to sail on.

T. Johnny called it a river because he had only seen such large streams as are called rivers. You call it a creek because you only know of such small streams as are called brooks or creeks. So we have three different names for streams of water. One of these days we shall learn something about rivers. George, will you tell us how Salmon Creek makes your mill-pond?

George. Father built a dam right across the creek, so the water was stopped from flowing; and it filled up behind the dam, and spread out wide and deep, and kept

getting larger and larger, until it came up to the top of the dam. Now it pours over all the time, and doesn't get any fuller.

T. George has told us that very nicely. One of these days we shall learn about something that is very like the mill-pond, only a great deal larger, yet nobody ever built a dam to make it.

Fanny. I know what you mean—it is a lake.

T. Now we will talk of some of the other things you have seen. John said he saw a meadow. How many others passed meadows on your way to school? (Hands raised.) John, tell us what you mean by a meadow?

John. It is a field full of grass.

T. The pasture was a field full of grass too, was it not? Are a meadow and a pasture the same thing?

Chas. The cattle eat the grass in the pasture, but the grass in the meadow is mowed and made into hay.

John. (Interrupting.) The cattle eat the hay too, don't they?

T. John should not interrupt. We know that the cattle eat the hay, but what Charles means is that they are not allowed to eat the fresh grass as fast as it grows in the meadow, as they do in the pasture. Let us try to find some other difference. When you look over the pasture, and then over the meadow, can you see any difference in the land itself?

Mary. Our pasture is a great deal rougher than our meadows.

George. Our pasture isn't rough, but it is swampy.

T. Why do you say yours is rough, Mary?

Mary. There are hills all over it and there aren't any in the meadow, only little bits of knolls.

T. But what do you mean by the hills?

Mary. (After thinking a moment.) When the ground is a great deal higher than the rest we call it a hill, and where there are a great many hills we say the land is rough or hilly.

T. That is well said. What do you say of land that, like the meadow, has no large hills?

James. We say it is level land.

T. When you read about level lands like

the meadow you will see them called *plains*. One of these days we shall learn something about a plain. Who has seen other hills than those in Mary's pasture?

Chas. I saw some awful high hills the other day when I was going to Ithaca with father and Uncle George, but uncle said they "wan't nothing" to what you see in New Hampshire, where he lives. He said there were some there so high that if you were on top of them you'd see sometimes the clouds, and thunder, and lightning under your feet, and where you are the sun would be shining. He calls them *mountains*.

T. That is very interesting, and we shall some time learn about those not "awful" but *very* high hills that are called *mountains*. Now we want to talk only of what we have seen. George says his pasture is *swampy*. What do you mean by that, George?

George. The ground is all wet and muddy, and little bunches of grass grow all over it; but you can't very well go across it for the ground is so soft that if you happen to step off the grass you will sink knee-deep in the mud. I got stuck in it the other night when I went after the cows.

T. But how do the cattle get along?

George. Oh! the pasture an't all swamp, and the cattle know where to go; and besides they don't care if they do get in the mud.

T. That word "an't" is not a very good one. I should say "is not" instead. Does any one know any other name for a *swamp*?

Mary. Some people call it a *marsh*.

T. Do you know, George, why your father takes that swampy land for a pasture, instead of planting corn or having a meadow there?

George. Father says the ground is so *awful* wet,—(class laugh)—so *very* wet, that he can't do anything else with it; and he says he is going to have some ditches dug to "run" the water off, and then next spring he will plough it up.

T. Do you know, Mary, why your father does not make use of his level fields for pastures instead of that hilly one?

Mary. We have some level fields that were pastures last year, but they are corn-

fields this summer. I asked father why he didn't plough that one too, and he said it is so rough and stony that it is not good for anything but pasture, but the cattle can get enough to eat and so he lets them run there every year; but he ploughs up the level pastures sometimes and plants corn and potatoes on them.

T. We have now talked as long as our time will allow. To-morrow we shall talk of the woods and other things you have seen this morning. Try to see something more when coming to school to-morrow. Who can tell me everything we have been learning in this lesson? (Hands raised.) Fanny may try.

Fanny. We have learned about pastures, and brooks, and a spring; and hills and meadows, and a swamp.

T. Now I would like to see the hand of every one who can tell me what each is, and where we may find some of each.

We observe that in the foregoing lesson nothing has been told the children, nothing learned by them *by rote*, but they have become conscious that they possess a knowledge of certain things, acquired by the use of their own powers of observation, and thus have their attention awakened for future observations and the path to knowledge opened to them. We also find in this simple lesson on a few of the objects accessible in the least varied neighborhood, the basis for the future idea of rivers, lakes, mountains, and plains; and in the use of the rougher and poorer lands for pasturing, but the better for culture, the germ for the future perception of the relation of the physical features of a region to the industries of its people. There still remain to be given lessons on the woodlands, or "woods" as the children call them, in which a little definition would be obtained by comparing them with an orchard as the meadow was compared with the pasture; and they would be noticed by the children as the home for certain animals, and afterward their uses to us found by them. In the same manner there would follow a second lesson on brooks in which the animals living in the water are noticed, and the uses of brooks to us obtained. In many neighborhoods there will be found in addition

to these physical forms, various others, as little waterfalls, valleys, etc. All should be noticed.

II. *The Industries of the Locality.*—

The lessons on the physical geography of the locality would be followed by lessons on the industries of its people, thus presenting a simple idea of the conditions of civilized life. The following lesson will serve to suggest the proper manner of carrying on these conversations.

Teacher. We have now had a number of lessons in which we have been learning about the lands, and the waters, the plants, and animals around us. Can you remember anything which we see every day and many times in the day which we have not yet talked about.

Children. Houses, fences, roads, etc.

T. You have none of you named what I was thinking of, but I think you will find it soon. What are houses for?

Children. For people to live in.

James. We haven't talked about *people* yet!

T. That is just what I want to talk about to-day. Why don't people live in the fields like the horses and cattle, or in the woods like the birds and animals?

Chas. They would be out in all the storms and cold, and maybe they would get sick.

Fanny. They wouldn't have any place to keep their clothes, and their food, books, and other things in, and they would all be spoiled.

T. Now can any one tell me why people build houses to live in?

John. (After thinking a moment.) To *shelter them* from the storms and cold, and keep their goods safe.

T. We have now found that people need *shelter*, and therefore they build houses. Do we need anything besides shelter? Suppose you each had a large fine house to shelter you and had nothing in the world else. Do you think you would be very comfortable?

Chas. We should starve if we did not have something to *eat*.

Susan. We would want clothes to wear.

Fanny. We would want beds to sleep in.

Children. And tables, and chairs, and dishes.

T. Let us talk about the food ~~first~~. Where does our food come from?

James. Father raises corn, and wheat, and potatoes, in the summer; and in the winter he fattens hogs and kills them for pork, and sometimes he kills a cow for beef, and sometimes a sheep for mutton.

T. Where does your father get the hogs, and cows, and sheep?

James. He raises them on the farm.

T. What do you mean by the *farm*?

James. I mean father's land, where he raises his crops, and his cattle, and sheep, and horses, and pigs.

T. That is very well. Now can some one tell me what people are called who, like James's father, have farms, and spend their time taking care of them and raising things upon them, and what their work is called?

Chas. They are *farmers*, and such work is called farming.

T. Then it is by *farming* that the farmers get their food. You said we wanted clothing too. How are the farmers to get that?

Susan. Mother spins wool and makes it into clothes.

T. But are the clothes we wear on a hot summer day like this, made of wool?

Mary. No, they are cotton.

T. Where does your mother get the cotton cloth?

Marg. She buys it at the store with butter and eggs.

T. Now try to remember everything you have at home that your father and mother can not raise nor make on the farm but must buy. (Sugar, furniture, books, etc., are named.) How do your father and mother pay for these?

John. Father always has a "great lot" of wheat and corn, more than we want, and he sells what he has to spare, and has the money to buy other things with.

Chas. And my father sells "lots" of wool, and some cows, and horses every year. That is the way he got money to build our new house.

T. Then it is by *farming*, that the farmers get not only food but their clothing and all their living. Now can you think of any one who gets a living in any other way?

Mr. Brown makes shoes. Mr. Gray has a saw-mill, and he cuts the farmers' woods and sells the lumber; sometimes he makes lumber for them, and they pay him for it. My father has a grist-mill, and he grinds the wheat for the farmers, and they pay him for it; and sometimes he buys what they have to spare, and grinds it into flour and sells it. Examples of manufacturing people, as the blacksmith, the cloth-cabinetmaker, etc.)

There are then quite a number of people who are not farmers, but spend their time in making articles of different things which they buy from the other people. How do they get

them? They sell some of the things to the farmers, who don't have them for themselves, and then they buy from the farmers the things they want. This is a second way of getting things, by making things and selling them to other people who can't well make them for themselves. Can you reason out who gets a living in still other ways?

Mr. Shaw keeps a store. He buys things in the city and brings them to the farmers and the other people.

Mr. Smith has a stone-quarry and sells large nice stones, such as they need for the sides with in the village.

The ideas discussed in a manner to that of manufacturing, will be of use to children acquainted with a simple life. The two other great resources of the material wants of civilized life are mining and commerce. The children should talk about the work of the miner, and of the church, will present to the minds another class of wants, of which affords a livelier class of persons. Now a man who is out the Constable and Justice of the Peace, of the neighborhood, whom the children know to be employed to keep the disorderly people in order, will give a first glimpse of a system of government that controls all the people

just as the rules of school control the scholar.

There will, therefore, be found here in these simple things, with which the children are just as familiar as with the faces of their companions, the means for the future illustration of the whole organization of civilized society,—that is, a division of labor in the great business of supplying our bodily wants, provision for intellectual and moral culture, and a system of government controlling and directing all things for the greatest good of every class of the people.

III. Position and Distance.—After these lessons on the country, in the midst of which the children live, there would follow lessons in which they are taught to determine the cardinal and semi-cardinal points of the horizon, by reference to the rising and setting sun. This should be applied by them in determining the direction of each home from the school, and if the teacher desire, of the several homes from each of those nearest it.

Next would be lessons on extent, in which they are taught to recognize and draw the inch, the foot, and the yard, and for practice find the several horizontal dimensions of the schoolroom, and its surrounding lot, the length, breadth, and height of articles of the schoolroom furniture; the distance of the fixed pieces from each other, and from the walls, etc.; the width of doors and windows, and their distance from each other, and the corners near them. The mile, half mile and quarter mile, they will learn approximately by ascertaining the distances of their homes from school. It is desirable that they should, if practicable, learn it absolutely by actual measurement, and thus have a correct standard to which to refer distances that may be given them in future study. These lessons on the points of compass and on extent are necessary as a preparation for the maps they are now to construct.

IV. Maps.—The first idea of a map should be given by drawing the schoolroom. The children have, as will be perceived, all the data necessary, that is, they know the size of the room, and the position of all its furniture, and the size and position of its doors and windows. They

have but to determine upon a scale, the need of which they will see from the impossibility of making the map the size of the room; to be told that the north side is to be placed at the top of the map, etc., and they can commence work. As the map of the neighborhood or school-district is a little more difficult, the following may be of value in indicating the manner in which such a lesson is given.

T. Now that we have learned all about the forms of the land around us, and the position of the buildings, the streams and other things, we will draw upon the board a map that shall show how they are all placed together. In drawing the map of our schoolroom, we found the length and the width of the room by measuring it, and then we drew one inch in length and width on the map for every foot in the room. Let us find how large a country we are to map now. Who lives furthest from the school on the north? (Hands raised.) How far to your home, Mary?

Mary. One mile.

T. Who lives furthest on the south? How far to your home, John?

John. A mile and a half.

T. How far then from Mary's home to John's?

Children. Two miles and a half.

T. Now there are very many feet in every mile. Do you think we shall be able to draw one inch for every foot in this map? That would be impossible. We will draw instead only one foot for every mile. What then will stand for half a mile? What for a quarter? Our school district does not have walls to begin with, as the school-house has, but it has roads on each side of it, and several crossing it, which will answer just as well; for when we have these we can easily put the houses in their place beside them. In what direction does this road that passes the schoolhouse extend?

Children. North and south.

T. Mary lives one mile north from the school. How long then, and on which side of this mark, which I place for the school-house, shall I draw the line for the road?

Children. Draw it one foot toward the top of the board.

T. Now I have drawn it. On which side of it is your house, Mary? Here is the

mark for the house. John, will you tell me how to draw the road to your house?

John. It goes south just a little way, just a few yards, then ends, and I go on the State road east about the same distance, and then another road goes straight south to our house.

T. Then how long am I to draw that south road?

John. A foot and a half, for the little turn don't count anything in a mile and a half.

The road was then drawn, and the house located as before. In the same way was found the greatest distance to be drawn on the State road to the east, and to the west; then the position and length of the little cross-roads leading off from each. This being done, the point at which the several little streams crossed the road was given by the children most familiar with each. Then the children living between the schoolhouse and these extremes, located their homes; then the public buildings of the neighborhood, the inn, church, post-office, etc., were located at the proper distance from the school-house. Then followed the little groves belonging to each farm, the marshes, etc., the map produced giving with tolerable correctness the topography of the district.

The children may now be encouraged to make at home, under the direction of their parents, maps of the farms on which they live. This will not only have the advantage of giving to the children additional practice of a pleasing kind, but it will also please their parents, and awaken in them an interest in the work of the school. The great value of these exercises, in a geographical point of view, is the practice they give in determining relative positions, in the comparison and estimation of distances, and in the constant association of the map with the region represented, which is as we have seen so essential to the correct use of the map in future. When a habit of accuracy in these respects is thoroughly formed, a great step is taken in preparation for the future systematic course of geography. The child has now obtained all his own locality has to give him, and may enter on his journeys, being prepared to derive the greatest possible benefit from them.

VENTILATING AND WARMING.

II.

WARMING.

warming of rooms, artificial may be derived from radiation, open fireplace; from convection, air furnaces; or from radiation combined, as in stoves, hot-steam apparatus. In connection of these, important economical questions are to be con-

sidered. The ancient of all methods is that of the open fireplace, which warms the room by simple radiation. Besides its cheerful appearance, it possesses several advantages for ventilation: the warm surface of the fire draws air from the room and draws it into the chimney. The chief defect of this method is the lack of economy, involving an astonishing waste of fuel. In its simplest form, that of a grate or fire-place, the air, 80 (Silliman) or 90 (Draper and Rumford) of all the air in the room escapes into the chimney and only a small portion reaches the apartment; which is radiated from the walls and the heated wall. To a considerable extent this defect was remedied by the open fireplace, who introduced large wood-burners, resembling the open fireplace, which he connected with the room by long and circuitous pipes, thus increasing the available heat.

The "Forest kiln" stove has been adapted to the room in what is called the "Forest kiln" method of warming is objectionable because it warms only one side of the room, the heat being radiant, not convective. Draughts are likely to arise, and draughts, may cause the chimney to smoke.

The stove form is liable to the same defects which will be considered in connection. With all its defects, the open fireplace is nevertheless the most common and as the air is always cool and well fitted for apartments for men and women.

The economical defects of the open fireplace are so glaring and irremediable,

that early in the present century efforts were made to replace it by other means. The first attempted improvement was that of warming by means of air previously passed over red-hot iron plates. The economical advantage over the fireplace was very great, but was counterbalanced by the injury to health. In the London Custom House, where the system was first employed, the health of the officers and the *employés* failed to such an alarming extent that after a very short trial the experiment was given up as a total failure. Alterations were afterwards made, which reduced the deleterious effects, though, as proved by many deplorable results, they did not altogether remove them. In hot-air furnaces, as now constructed, the air, admitted from without through openings in the wall, is warmed by being passed over metallic plates raised to a temperature of about 400° F. On the score of economy, this method possesses great advantages, although, as will be shown, it also involves a great waste of fuel. Of all the systems used, it is the most scientific; for by the register a supply of fresh, and, theoretically, pure air, continually flows into the room. Unfortunately, this advantage is merely theoretical, not practical, and the whole method is open to fatal objections.

The air introduced by the register varies in temperature from 150° to 250° F., being therefore frequently warmer than boiling water. Such a degree is of course unnecessary and injurious. As the heated air is specifically lighter than that previously in the room, it rises immediately to the ceiling, and if means have been provided for its escape, it passes out. If it is confined, the temperature of the room soon reaches a point which renders the air unfitted for respiration. In each case, then, there is a waste of fuel. The intense heat of the incoming air defeats the advantage of ventilation which theoretically should accrue from the use of these furnaces. The hot air rises and presses the impure and

cooler air to the lower part of the room, where it must be re-breathed. By the high temperature the air is desiccated, and sulphurous vapors are frequently driven off the iron plates: whatever organic matter may be present is charred, and an empyreumatic odor arises in the apartment. Another effect of excessive temperature is to destroy the ozone, which is essential to a proper condition of the atmosphere. This element is so valuable as a disinfectant that its absence tends fearfully to the increase of impurity. Extreme heat also so impairs the vitality of the air, that even the evaporation of water is ineffectual for its restoration. The total absence of radiant heat renders necessary for comfort a temperature several degrees higher than would otherwise be required.

When the failure of the hot-air apparatus in the London Custom House had demonstrated its inefficiency and injurious character, Dr. Arnott introduced enclosed stoves. In economy, these certainly excel all other means of warming. Dr. Arnott's stove consumed only six pounds of Welch anthracite coal per day, and gave off heat enough for the coldest weather. But economy is the only redeeming quality in it. To use the words of Dr. Draper, "stoves are the vilest inventions ever conceived for the destruction of health; they possess all the defects, with none of the advantages of hot-air furnaces." Ventilation is unassisted, for the only means of egress for air is through the little opening below, which conveys not vitiated, but pure and cool air, which we should retain.

Heating by hot water conveyed in pipes was conceived by the Marquis de Chabannes and used by him in his English residence. It is advantageous; for water possesses such specific heat, that it can warm three thousand times its bulk of air while cooling only 1° from a temperature of 270° F. When the water is driven through under low pressure, this mode is not economical on a small scale, as very large pipes are required. When used under a high pressure of from seventy-five to six hundred and seventy-five pounds to the square inch, as in Perkins's apparatus, smaller pipes are required, and the method becomes more efficient. Heating by steam

on the same principle is in common use, and is economical. In the common steam and high-pressure water apparatus there is danger of explosion and fire from pressure and temperature. A better method of employing steam for heating purposes is found in Gold's "Radiators." This apparatus consists of two plates of japanned sheet-iron, joined together by rivets at the bottom, of concave depressions in the outer sheet, forming thereby a series of connected cells, into which steam is admitted at the extremely low pressure of one pound to the square inch. The water of condensation is returned to the boilers through the pipe by which steam is introduced. As the supply of steam can easily be regulated, any desirable degree of temperature may be attained and preserved.

Against all methods combining radiation and convection, serious objections may be urged. All are unscientific, as thorough ventilation without total depression of the temperature is impossible. In all, with the possible exception of Gold's "Radiators," the high temperature attained by the metal causes it to char and decompose such organic substances as may be in the air. The other objections urged against warming by hot air apply in most cases with equal force to this class, which have not even the theoretical advantage of assisting ventilation. The fatal effects upon the vital qualities of the atmosphere, resulting from contact with highly heated metallic surfaces, are readily shown by an experiment recorded in the Philosophical Transactions of the Royal Society (Eng.). A quantity of air, caused to pass and re-pass through a number of highly-heated metallic pipes, was collected in a receiver and allowed to cool. In it the experimenter placed a cat, which was immediately seized with convulsions, and in a minute fell apparently dead. Upon being brought into the open air the animal recovered very slowly. There can be no doubt that the shortening period of life, so marked within the last fifty years, is in great measure owing to the extensive use of closed stoves. Dr. Ure, in his report upon this subject, gives us his conviction, that air, thus warmed, cannot act continuously upon human beings without impairing their constitutions and

g the duration of their lives. It nion of Florence Nightingale, that heated metallic substances tends reduction of lung diseases.

method of warming has been by Mr. E. T. Robbins, which is on a correct application of sciences. If it prove as successful in as it is beautiful in theory, we must that a long step has been taken solution of the problems of warm-entilating. In this apparatus the enerated in a structure built prind-brick or tile, and avoids metallic

The hot air is not thrown di-o the room, but by circulating made to warm the floor, which, portions as are especially to be made of tile or steatite. This is so poor a conductor of heat emperature can not rise to an undegree. By an arrangement in portion of the heat-generating below, air is drawn from with-brought into the rooms at the temperature of 70° F. The pecun-tages of this method are, that r portions of the room are kept

warm; deleterious draughts cannot occur; the decomposition of animal substances is avoided, and the introduction of soot or devitalized air into the apartment is readily and absolutely prevented. Theoretically, Mr. Robbins's apparatus is all that can be desired. The system of ventilation is similar to the action of hot-air furnaces, but is free from the danger of injurious effects. As, however, we have been unable to see the apparatus in action, we feel hardly at liberty to give an absolute recommendation.

Having thus discussed the merits of the various systems, the question arises, Which is best fitted for schools? For a small building, such as most of our country school-houses, nothing can equal the open fireplace. This, it is true, is expensive, but the waste is not so excessive as to bear any weight in the scale against health and clearness of mental conception, or to excuse the substitution of stoves. For larger buildings, more economical means are required, and one of the more complicated systems must be adopted. Which of these should be accepted, we will not assume to decide.

THE UNFINISHED PROBLEMS OF THE UNIVERSE.*

II.

EMENT OF THE STELLAR UNIVERSE.

ONOMERS adopt the theory that solar system is sweeping with us velocity through space, and t such a rate that it passes over red and fifty-four millions of miles ar.

he present time no one has ven-say what the character of this . We are moving toward a cer-t, and that point is only approxi-known. Are we moving in some arve? Are we moving in some le? Are we sweeping in some us ellipse? or are we moving in

a simple right line toward the point whither the sun is urging his flight? If the sun is indeed moving in any vast circumference, as soon as we can get a portion of its mighty curve sufficient to determine the plane in which it lies, then somewhere in that plane, in the depths of space, will be found the mighty centre about which the sun and solar system are revolving.

Up to this time, however, we have no knowledge on the subject. All we can say is this, that if this (illustrating) be the direction in which the sun is moving, and perpendicular to this line we describe a plane entirely around the heavens, cutting from the solar sphere a circle, somewhere in that mighty circle will be found the centre about which the sun is revolving.

late Prof. O. M. Mitchell, in *Pulpit* am, No. 3, published by Schermerhorn, & Co.

Within a comparatively short time the attention of astronomers has been directed to an investigation with which this is specifically combined, and it is nothing more nor less than this grand question: Is there, in the whole starry heavens by which we are surrounded, any great central body, any mighty controlling orb, which holds a proportion to the bodies by which it is surrounded, such as our central sun holds to the planets which sweep around it? Looking at our own system, and supposing this was by possibility a sort of picture hung up in the heavens on a miniature scale, in order that there might be realized in the starry firmament with which we are allied another mightier system, of which all the stars should constitute the sweeping planets, and in the centre of the whole some grand controlling orb, magnificent in its proportions, grand in the quantity of matter which it contains, vast in its outline and circumference, and sufficient to hold these mighty worlds and to produce harmonious and perfect movement throughout the Stellar Universe—is there such an orb existing in space? I answer, there is not. Why? Because we are enabled by the telescope to penetrate space in every possible direction. Ah!—you may answer—but you can only bring into your telescope the light that comes from luminous bodies, and if this vast central orb is non-luminous, your telescope fails, and you can accomplish nothing; and when you state that such a body does not exist, you state what you do not know.

There is another method by which we may acquire a knowledge of the facts in this case. If it is true that this mighty orb exists in space somewhere, surrounded by all these glittering stars, even if it be opaque, and sends to us no light, if it has the attractive power which belongs to our own sun, and if it be energized by this mighty power of universal gravitation which holds these starry worlds in its grasp, then we are enabled by means of the telescope to detect that fact; because in the immediate vicinity of this central body the stars will sweep more rapidly under its gigantic power than those at a greater and still greater distance—just as the planets nearest to our sun revolve with greater

velocity than those which are more remote.

Now we have examined the whole starry heavens, we have mapped out these heavens, and located these stars. We know where they were at the beginning of this century; we know where they are now. We know the amount of change which has taken place, and in case there was one region in which stars are more rapidly moving than in another, we have a sufficient knowledge of the heavens to detect this point in space. We are therefore enabled to pronounce that such a mighty central orb does not exist anywhere throughout the universe of fixed stars with which we are allied.

There being no such body, you may of course conclude that there can be no revolution around a centre. That does not follow. Let me tell you why.

A few years only have passed away since an astronomer commenced the examination of what are called "double stars." Sir William Herschel is again the pioneer in this field of investigation, and he tells us that when he began he gathered from all the catalogues of which he had any knowledge a list of all "double stars" then known. I think the list consisted of about five. It has since rapidly increased. He himself ran it up to hundreds; his son, who succeeded him, ran it up to thousands. After a while Struve, who had charge of the great refractor at Dorpat, gave his whole observing energy to this one department of the heavens, and the result has been that he has published a catalogue, in some sense, almost without number, of these double stars, which exist strewn richly throughout the regions of space.

Now, we find, after a rigorous examination of these double stars, that it is utterly impossible for us to suppose that they are optically united, that they are accidentally so located in space that they are so close together as to give the appearance of union; and when we come to apply what is called the calculus of probabilities, we find a limit within which this possible optical appearance may occur, and everything beyond or inside of this limit must be a physical union. The stars are not merely accidentally located in this way; they are

combined, the one with the other, each energized by the power of gravitation, and the two revolving about their common center of gravity. Now, this announcement which I make, extraordinary as it may appear to those who have not hitherto investigated it, has been fully carried out and verified by observation. We trace these revolving suns in their orbits until, under the gaze of man, some of them have performed entire revolutions. Many others are far advanced. Astronomers have gone yet further, and, applying the great law of gravitation and the laws of motion, have actually predicted their periods—have given us an ephemeris which should mark the place of these bodies in coming time, and these predictions have been verified: so that we have these revolving orbs scattered throughout the heavens; some rapidly sweeping through space in periods shorter than the periods or revolutions of our own planetary orbs; others rising in grandeur and magnificence until we find their periods reaching by possibility millions of years.

Let me call your attention to a single example. There is a quadruple star in the constellation Lyra—two double stars—the periods of which have been determined comparatively, and we find that one double set is revolving in this manner about the other—all of them sweeping through space and performing this mighty revolution in a period of not less than a million of our years. But you may ask me, how is it possible to decide such a question as this—how can it be done? First, we announce that these bodies are physically united, from the fact that they are all moving together in one common direction, with one equal velocity through space. I do not refer now to their movements or revolution about each other. I refer to a common proper motion, a sort of tie carrying these bodies off bodily together. It is utterly impossible that they should be thus carried off together unless they were physically united. They make up a mighty system, and when we come to measure the distance by which these bodies are severed, it is possible to determine roughly the period of revolution which must by necessity make up the vast time which is required

for them to sweep entirely around. Thus we find that there is a diversity in the constitution of this universe, such as we find surrounding us everywhere upon the face of the planet that we inhabit. We may anticipate, therefore, schemes and systems rising one above another, each as diverse from the other as are the planets and animals that grace, dignify, and beautify the earth. So it is in the heavens. Here we have bodies of all possible kinds and characters.

If we take the telescope and look out upon the universes by which we are surrounded, we find them diversified in every possible way. Our own mighty Stellar System takes upon itself the form of a flat disk, which may be compared to a mighty ring breaking out into two branches, severed from each other, the interior with stars less densely populous than upon the exterior.

But take the telescope and go beyond this; and here you find, coming out from the depths of space, universes of every possible shape and fashion; some of them assuming a globular form—and, when we apply the highest possible penetrating power of the telescope, breaking into ten thousand brilliant stars, all crushed and condensed into one luminous, bright, and magnificent center.

But look yet further. Away yonder, in the distance, you behold a faint, hazy, nebulous ring of light, the interior almost entirely dark, but the exterior ring shaped and exhibiting to the eye, under the most powerful telescope, the fact that it may be resolved entirely into stars, producing a universe somewhat analogous to the one we inhabit. Go yet deeper into space, and there you will behold another universe—voluminous scrolls of light, glittering with beauty, flashing with splendor, and sweeping a curve of most extraordinary form and of most tremendous outlines. What is the meaning of all this? Nothing but the diversity with which the Almighty Architect has chosen to mark the superstructure by which we are surrounded. So that we may anticipate all the diversity that exists here on the earth and in the heavens beyond us, in the system with which we are allied.

A DAY IN AN ENGLISH BOARDING-SCHOOL.

THE Reverend Anthony F. Thomson, of Lincoln College, Oxford, late Head-Master of St. John's Foundation School, London, gives us a graphic account of a day in a "driving school," which we present in nearly his own words. The "driving school" is an establishment very much admired in England, and well patronized by certain classes of parents who care for nothing but what is there called "cramming." We know of some American Boarding-schools, not altogether unlike this peculiar English Boarding-school, with its "driving" facilities.

The boys or girls—for the day is pretty much the same in either case—rise at six o'clock. After a hurried toilet, scrambled through in order to get down for roll-call, a rush is made for the school-room. When arrived there, the roll is called by the usher, and "tasks" are instantly assigned, if not something more striking, to the unhappy wight who, not being strong enough to secure a basin in his dormitory, from want of water, or a towel, or some such cause, comes down either late or untidy. Then comes a hurried prayer, read either by the principal or an usher—most commonly by the latter. This done, and it rarely takes three minutes, there is a scramble for books, pen, ink, etc. The usher's voice predominates over the noise of the mob of pupils, and in about a quarter of an hour order is supposed to be established. Then enters the principal, or more commonly the vice-principal, as it is now the fashion to call the senior usher, and his class is summoned. The vice-principal is drowsy, is very cross, cold, and consequently harsh. The class is cold, half-awake, consequently very stupid. Jones, the *bête-noire* of the driving school, is discovered to know nothing, to have learned nothing, to care for nothing, especially about his lessons. The vice-principal waxes wroth, particularly as the other ushers are all hearing their classes at the same time, and the din is intolerable. All the ushers, following suit, then commence to wax wroth. Tyrannical and absurd tasks are set, perhaps two or three sound

boxes on the ear are distributed, and the school calms down into sheer sullenness—complains of cold, numb fingers, no time to learn lessons, etc. The ushers go on in despair, "driving," that is, getting through as much as they possibly can—no matter how; when about eight o'clock the principal appears, a stern man, who wishes to know "what has been done this morning?" The real answer would be "next to nothing;" but the books are exhibited, the tasks recounted, Jones "had up," reprimanded, perhaps incontinently caned. Eight o'clock strikes—books, slates, everything goes flying. Principal, vice-principal, and ushers disappear to their private breakfast, and the boys rush like wild hounds to theirs. This meal gulped down, without order, decency, or reserve of any kind, a rush is made to the playground, the little boys being knocked down in the "burst," or found crying, because they have had their allowance of bread and butter forcibly taken away by Jones, whose tasks and canings, though numberless, only make him as ferocious out of school as he is dull in it.

At a little before nine, the day-boys arrive, laden with slyly-purchased dainties, on which they have a considerable premium, and during the dispensing whereof they unbosom their minds of all the trivial gossip of the town, in return for which they receive distorted and exaggerated accounts of the school, the principal, the ushers, and, from the little boys, of "that beast" Jones. At nine the school-bell rings; all rush into school for another roll-call. Then comes more scramble, more tasks, more din, until the classes are formed, and the driving begins again. Long before twelve a general yawn seems to pervade the whole establishment; the boys get uneasy on their seats; the clock is carefully eyed—every minute counted; the ushers feel that even *they* cannot drive any more into, or get any more out of, the boys. Twelve strikes; again the general rush—Jones escaping in the *mêlée* until forcibly reclaimed from the playground by the junior usher, who is responsible for

to the principal. Jones is back to the heated, dirty school-ere he is confined till dinner—a dozen other desperate offenders, each with an almost ink-splashed forehead before him, half of which all well know, be “let off.”

The poor usher turns his head for a moment to the incorrigibles rushing about, battles commence, books about, ink spilled. The usher in lars Jones, and is about to drag the principal, when one o’clock off steam Jones and the incorrigibles comes a rush for the few the jack-towel in the so-called pocket-combs and scraps of looking in great requisition. The rings—in rush the wild hounds jiggles for places in proximity to who are supposed to be liberal of food, and away from Mrs. who is known to be “mean,” elder of the day. A scant grace, ling, before inferior meat, though is brought in ostentatiously in s, and is consequently half raw, unlimited diet,” which is washed in a very poor thin beer, infinitely good spring-water. There is no e; as each boy completes his strong and active gorging, the timid bolting their food—they from the table, and for a brief ere their own masters.

O’clock, again the school-bell. Masters arriving, the principal appears, and school goes drearily on, the vice-principal being in ; as the ushers are engaged giving lessons in writing and , the school enjoys a comparative going to sleep, the elder boys comparatively idle (the “foreigners” disciplinarians), while the little kept awake by raps on the knuckle ruler, or an occasional box on the head of the vice-principal, who, having a right, thinks it proper to use it at school ends, at four o’clock, lazily snores, when he is disturbed by the vice-principal, who forthwith rebukes him, and with interest, having seen Jones’s matutinal iniquities.

Then comes the rush out—again the “keeping in”—the poor junior usher, upon whom this department devolves, pining for fresh air and quiet—the day-boys receiving their commissions, and carrying off the day’s scandal. At five o’clock, tea—after the fashion of breakfast; at six, school again—this time with the addition of the principal, who, freshened up by his afternoon’s rest, and, perhaps, nap, thinks every one ought to be in equal trim. For two full hours he *does* “drive” boys, ushers, vice-principal, and all. At eight, half the little boys being asleep, notwithstanding the driving, the boys go wearily to bed, the parlor boarders having an hour “extra.” The poor usher goes the round of the dormitories, chases some into bed, hears a host of minor complaints from others, suppresses three or four combats, and puts out the gas. After much noise, some singing, infinite chatter, the school drops off to sleep; Jones vowing to be “revenged” on all and sundry when he goes home, meantime coolly plundering a “new” boy’s store, who, awed at Jones’s might, meekly and servilely gives himself up to be plundered. In the midst, however, of Jones’s glee, the vice-principal drops in, seizes Jones, and threatens immediate castigation, but to save trouble sees him safe into bed, with awful menaces as to the coming dawn, and then joins the little party of worn-out ushers in the “master’s room” at cards, bad cigars, gin and water, and general discontent.

Such is no exaggerated account of a pupil’s day at a “driving” private school, where *work* is really *meant* to be done, and where the principal conscientiously strives to make his pupils work, and believes they are “advancing.” No doubt there are some among the number of pupils, who, notwithstanding all the drawbacks, do improve, and on them the school hangs together; and looking at the wretched waste of time, temper, and ability in most schools, it is no wonder that the driving *does answer*, and that the principal finds that, term by term, his numbers increase, and he gets continual drafts from other places where equal amounts of confusion and mismanagement prevail, but with the substitution of indifference, laziness,

ness, or positive deception, for driving. But let any indifferent person examine the system a little keenly, and looking closely at the boys as they finally leave the school, consider their deplorable ignorance, as a mass, their wretched habits, almost total

immorality, and very often impaired health and dulled intellect, and he will plainly recognize the *real* end of the "driving school"—evidently a mercantile speculation under the guise of an instructional institution.

STRAY CHAPTERS BY AN OLD SCHOOLMASTER.

THE EXHIBITION.

FROM time immemorial it has been customary to close the terms of district schools with a grand exhibition, showing the proficiency of the pupils in such branches as they were supposed to study. The custom doubtless originated with some incompetent teacher, who, finding himself likely to end his time in disgrace and lose his prospect of making money during another winter unless something were done to retrieve his decaying fortunes, determined to have a grand "whitewashing" at the close of his term. In this way, perhaps, he hoped to blind the common-sense and excite the applause of his patrons, and thus secure from them "a strong certificate" of his thorough management. He must have proved successful, for he has had many imitators; and the "Exhibition" has become so fashionable that it proves a sad drawback to every honest teacher. Whether Mr. Williams, the teacher in H—, was the originator of this fashion I can not tell. Upon this subject the record is silent. He certainly introduced it into H—. As it was before unknown, the announcement and the novel preparations raised popular expectation to the highest pitch. For several weeks toward the close of the term the pupils were trained in elocution, studying dialogues and orations of the most difficult character and affording the widest range for declamatory ranting.

The long expected "Exhibition day" arrived. Everything seemed propitious. Smiles were on every face: even the usually fierce countenances of the trustees were beaming. Mr. Williams himself was in the best of spirits, and his crooked back

seemed to straighten up full ten degrees. The little Presbyterian church on the hill had been thoroughly swept and provided with a huge platform by the willing hands of the older boys. The people assembled from miles around. The appointed hour arrived. Mr. Williams was busily engaged in superintending the toilette of the young ladies ensconced behind a blanket shawl at one side of the platform, inclosing an area termed the ladies' dressing-room. He suddenly emerged on perceiving indications of an *émeute* on the opposite side, where, similarly screened from observation, the masculine forces of the school were reaching a pretty obvious condition of fermentation. His presence there seemed not to have a very soothing influence. In about a quarter of an hour, however, he reappeared with a somewhat florid countenance, his hand wrapped in a handkerchief. At a nod from Mr. Williams, the pastor of the congregation then took his place upon the stage with becoming dignity. After scanning the breathless audience for a few moments, he slowly arose and with grave voice announced that the meeting would be opened with prayer, which accordingly followed to the extent of thirty-five minutes. This over, a maiden of thirteen summers, possessing an extremely childish face and having a net weight of one hundred and fifty-eight pounds, read a formal invitation to the parents, etc. This was a piece of exquisite poetry, conceived by Mr. Williams, whose reputation as a poet was not exceeded by his renown as a teacher. The effect on this occasion was remarkable; it deserves reproduction. The primary intention was

in general chorus to the tune
 "red," but this was abandoned
 some insuperable difficulties in
 action.

THE POEM.

mothers, sisters all,
 come here at our call;
 y with our faults
 minds are full of halts.
 what we've overcome
 the good "old folks at home."
 we tremble in each limb,
 ways may not be trim.

mble, falter, quiver,
 ink us white of liver;
 ourselves just in our place,
 the kind just of the case.
 old, and we are young,
 rs these words have rung,
 1 by our good teacher,
 allent and true far-reacher.

onsense here have learned,
 ands have often burned
 our thoughts have often roved,
 foolish things have loved.
 ve walked in learning's path,
 ve trod the way of truth,
 ve grasped at education,
 test bulwark of our nation.

mothers, sisters dear,
 grateful for your presence here;
 hope you joy may feel,
 hope it may be real.
 greet you to our anniversary,
 you than your dairy.
 ad you'll something learn
 will make you better men and
 ien.

et of this specimen of rural
 n better be imagined than de-
 Mr. Flint complacently stroked
 c collar and turned toward his
 benignantly nodded her entire
 1. Mr. Brown, chairman of the
 at two inches higher as he con-
 himself upon his extraordinary
 electing such a wonderful teacher
 Williams. The good pastor could
 express a smile at the decidedly
 ersification. While the conti-
 nought displayed throughout the

poem so affected a young chap "fresh from
 college" that he irreverently gave way to
 boisterous mirth. The ladies were breath-
 less with amazement at the power of the
 intellect which could conceive "such beau-
 tiful rhyme." Mr. Williams, alone unmoved,
 intently examined the programme. The
 poem was a marked success!

Next came three dialogues. With won-
 derful discretion Mr. Williams had ar-
 ranged that these should require at least
 three-fourths of the older pupils. He had
 thus discounted all possibility of dissatis-
 faction or envy among the parents. The
 dialogues passed off well, being, according
 to the judgment of those whose children
 took part, very creditably performed.
 Music followed, which, when we take into
 consideration the instruction and the ad-
 vantages enjoyed by the performers, was,
 like lord Dundreary's joke, pretty good for
 them. Some untimely strictures were
 whispered by envious maidens of unknown
 age. This one was "stuck up" or that one
 "squeaked awfully," or some other one
 "stretched her neck too far," or some one's
 dress was too "low-necked" or in "awful
 taste." Time was given, that the equa-
 nimity of the audience might be restored;
 after which Mr. Williams begged leave to
 indulge in a brief dissertation upon schools.
 As no dissenting voice was heard, he pro-
 ceeded to allude to the necessity of holding
 out inducements to children and the im-
 portance of accurate information concern-
 ing the three essentials, "reading, 'riting,
 and 'rithmetic." He inveighed fiercely
 against those ill-starred reformers who in-
 troduce new-fangled notions into schools,
 and regard grammar, spelling, and geo-
 graphy as equal in value to elegant reading.
 He was grateful that his time had not been
 wasted in attempts to acquire such useless
 knowledge. After ridiculing all such
 notions to his utmost satisfaction, he gave
 a brief account of the progress made by
 the school during the preceding term, and
 congratulated himself as well as his patrons
 upon the wonderful success attending his
 efforts. He concluded his address by
 thanking the parents for the efficient sup-
 port they had rendered him in his labors,
 and hoped they would still extend the
 helping hand to his successor, whoever

he might be. The speaker's voice was somewhat husky, and showed that it had not yet fully recovered from the shock sustained at Mr. Flint's house.

The next step was a solo oration by Thomas Flint, who thereupon earnestly expatiated on the impropriety of expecting great things from one of his tender years, and gave the audience much valuable botanical knowledge, especially concerning the inscrutable tendency of insignificant acorns to become extremely significant oaks. He also stated that Alexander, Napoleon and they themselves (the audience, of course) were once children, from which premise he drew the startling conclusion that lambs and children should be carefully nurtured during infancy, because should they live they must inevitably become sheep and men. All of which was rendered to the utmost satisfaction of Mr. Flint and received great applause from the audience, who thought the piece "a wonderful thing for a boy of his age to make up."

The remaining exercises were of like character. It is unnecessary for me to particularize, lest I should seem to be biased in favor of some or prejudiced against others. Some curious exhibitions were made. Hamlet's soliloquy was eloquently rendered, so that the younger children hid their faces affrighted and the elder gaped in silent wonder; while the old folks trembled lest the excited orator should tear himself in pieces. The latter feeling, however, was totally uncalled for; the speaker's excitement was all "put on," for while he racked himself until he ached, he was invariably glorying in the majestic character of his performance. Pathetic renderings were given of several other

portions of Shakspeare, after which the exhibition was appropriately closed by the pastor, and the audience was dismissed.

Before the people had opportunity to retire, Mr. Brown, chairman of trustees, jumped to his feet, and in an excited voice requested the "folks" to remain, as he had something important "to motion." The folks remained, and the gentleman, unrolling a vast sheet of paper, read off a series of resolutions presenting great gratitude to Mr. Williams for his "laborious and successful labors during the past winter," and requesting him to accept the position for the following year. The resolutions were unanimously adopted, and the offer was immediately accepted by Mr. Williams in a neat little speech. The assemblage then dispersed.

The exhibition was a success. Of course it provoked some criticism; but this was to be expected. Mrs. Spence, whose marriageable daughter had not been chosen to sing, was thoroughly disgusted with the whole concern, and denounced it unsparingly as a "theatrical performance;" in all of which she was heartily seconded by Deacon Wiles, who during the progress of the exhibition had proffered her his heart and hand, as the only practicable means of securing an interest in the property to which she was an unavoidable appendage. I am happy to say that these were almost the only dissatisfied persons in the district. The majority were, to use the language of Mrs. Jones, who had recently returned from a visit to New York, "in a perfect ecstasy over the exhibition." The affair took so deep a hold upon the affections of the people that "exhibitions" have been customary in the town and the surrounding country to this day.

SCHOOL GOVERNMENT.

THERE is no subject in the education of youth so perplexing to the teacher, or on which his mind is so much exercised, as that of discipline.

One difficulty is, that no system ever devised has been suited to all schools—

primary or higher—large or small—of both sexes or exclusively of one—of all ages, ranks and classes. There is such diversity of dispositions, views and abilities, that it is difficult to decide upon a system of good discipline for all institutions.

present development, the human mind knows only two general principles of government, *rewards* and *punishments*, and all plans are reducible to these elements. We assume, in the first place, that God must govern, if he governs well,

We admit love to be a strong motive, but in the variety of temperaments which collect in schools, it is almost impossible to bring this influence to bear.

We hold, then, that a teacher must govern as to make his pupils do wrong, or, at least, to repeat a wrong. The great drawback to this with the untrained teacher is, that they lack the firmness and exactness. To govern a school aright involves much watchfulness and self-denial; and teachers, like all men, sometimes love ease, and manage their schools as pleasantly, as a little personal trouble as they can.

As discipline becomes relaxed, order can not be fully maintained. A difficulty is, that many of the children in school are in their nature essentially, and are overlooked until their misdeeds make disorder, and they gradually pass beyond the full control of the

teacher. To maintain discipline, we strongly advocate corporal punishment. This never fails unless it has been neglected. A child was young, and only after he has become accustomed to disobedience. If-willed. We know this theory has been much written against, and that a more easily given than a reason for it. We contend that this degree of severity is strict justice in its execution, and is, by means, after all, to secure really effective discipline. We do not advocate of constantly whipping—in fact, it should not be resorted to for trifling offenses; nor do we approve of slight punishments that only serve to enrage the child: it should be sufficient to cow the wildest pupil, and never any more. It is only just measure of the quantity of punishment. Again, an instructor should be ready to excuse a violation of his rule on the ground that it was unintentional. Nature never has excuses for intentional offenses. If we place our child on a hot stove the pain that follows

is not relaxed because we “didn’t go to do it;” but the punishment is always exactly in proportion to the violation of nature’s law; and this is the true mode of procedure in school government.

All misdemeanors of children are naturally of two classes—disobedience of forms or regulations for order, and grave offenses, such as malicious mischief, wilful lying, improper language, obstinate idleness, etc. These, and like offenses, should be met firmly. On the first occasion we would detain the offender after school-hours, admonish him in a short but positive manner, enter his name and the nature of the offense in a book kept for that and similar purposes. If a repetition should occur we would resort to corporal punishment, with enough severity to make a salutary impression.

For the minor misdemeanors we would have some punishment other than corporal. For instance, a boy drops his slate, making a noise that disturbs the school. He pleads that it was an accident. The teacher excuses him, and the consequence is, twenty slates, perhaps, fall within a week. Some slight but proper punishment, or forfeiture, should invariably follow every violation of the regulations; for, to say the least, it is carelessness, and this is a fault. “Atwater’s System,” consisting of “Merit-tickets,” is excellent. It makes every violation of rules subject to forfeiture of a “Merit,” by having the offender’s name registered. If to this were always added some restriction or additional punishment to suit the various grades of offenses or repetitions of them, nearly perfect order might be secured in any school.

Talking is a bad practice in school. It is often really necessary between pupils, and sometimes involves no interruption to others, if done in a whisper. Yet we would prohibit it altogether, unless by special permission. You can not maintain discipline without a rigid rule on this subject. Let every teacher carefully prepare a list of what must be done or avoided, and after due consideration affix a penalty for violating a regulation. Then, he must be firm on all occasions, to every one alike, rich or poor, large or small; accept no excuse, and carry out the prescribed punishment.

ment in perfect evenness of temper, without allowing discussions. If the teacher sees the offense himself, he can decide promptly; if he does not see it he should give the accused the benefit of the doubt.

Always during school-hours the teacher should be in some respects a different personage from what he is at other times. He should not talk to his pupils except on matters pertaining to the school; he should maintain a dignified deportment, and never violate any of his own rules; he should be polite but not familiar, kind but firm. Out of school he may go with his pupils to the playground; show an interest in their sports; encourage all healthy exercise; train both sexes in Calisthenics. But we doubt the propriety of participating in a game of ball or marbles. It will not tend to advance his authority nor increase respect.

It is perplexing to decide when a lesson is sufficiently well recited to pass, and to establish a constant and uniform rule on the subject. We would suggest the following plan. Let your classes be of moderate size, arranged, if possible, strictly according to the abilities of the pupils. Assign no greater lesson to a class than you would to one pupil, and ask the questions without regard to the order of the text book. If any one can not give an intelligent and suitable answer to two or three questions, send him at once out of the class and require the lesson to be re-studied. To hear lessons over and over again is indeed wearisome; but firmness in this, as in

every other rule, will sooner or greatly reduce the delinquencies. Corporal punishment may sometimes be necessary to induce a proper application.

We can not conclude without allusion to the monitor system. This mainly in having some one of the boys on duty every day to register names of offenders, with the offense. The monitor can be called upon when necessary as evidence, whenever the teacher has doubt. All pupils so "put" forfeit their mark or ticket of merit. The system adopted may require, besides going the special punishment preceptor. In large schools, monitors are indispensable to report misdemeanors.

Judicious punishments are generally of four kinds: 1. The use of the "Keeping in;" 2. Loss of merit-tickets; 3. Putting under suspension, by which the offender loses for certain privileges, or suffers a reprimand or has extra study. We are opposed to punishments which expose a pupil to ridicule of his companions,—such as standing on high stools; wearing a dunce cap; standing on one foot, or the like; holding the hand with a ruler; and, at times, constantly threatening and seldom forming, calling ugly names, or a censure of a pupil's appearance, clothing, or country. In fine, a good teacher will be a gentleman in all his actions, calm, dignified and gentle, but ever insisting on a quiet school and well-recited lessons.

NERVOUS TEACHERS.

I LIKE the EDUCATIONAL MONTHLY. It is alive; it is American, distinctively; it is devoted to two things—as many as can be successfully discussed and carried by one "Monthly." It lives; more, thrives; which shows that *progress* has been made.

More than this, while it is American, it is neither clannish nor are its suggestions drawn from one well, but it gathers of the good, the beautiful, the true, wherever

they may be found; and its writers stand on points of enviable altitude, and by the spirit which breathes through their line, to all who read, "come up hit."

I notice, however, in an admirable article on "The Health of Teachers," a suggestion that to me seems not to harmonize with truth, and I wish to consider it as a suggestion that it may not hereafter, be sug-

questioned, by the allegation that the MONTHLY had indorsed it. : "And first comes the excessive or mental strain, which a teacher d to maintain in governing his d in imparting instruction." Not it, as to the governing! On this chers and schools are divided into es; those who govern, and who -which are governed, and which

It is said, and truly, that Dr. ruled by love." Now, the teach- ules or governs by love, will *not* ged to maintain" either an "ex- ervous or mental strain," and con- will not from that cause find prematurely old. Indeed, those incapable of governing in this be under an "excessive nervous l strain," but is it not rather from o overcome or subdue, simply be- y utterly fail to govern?

we cannot concede that the ner- rehension of an outbreak of in- ation is a legitimate incident of

The teacher who suffers any ess in reference to his government

at once admits his incompetency to govern, and therefore to teach; while *the question of government never disturbs the true teacher*, though that of discipline may. No nervousness—no mental strain on that subject, with him, for he knows that a gesture, a look, or a word, will suggest to the thoughtless pupil his error and its remedy.

And not only this, but he knows also that his position or relation to his school on the question of government is much like that of the Russian Czar—his behest as absolute as an imperial ukase. The health of such a teacher may fail from any one or all the conduces to disease which are incident to a sedentary pursuit, but never from an "excessive nervous or mental strain," simply because he never suffers anything of the kind.

Under these considerations it is perhaps pertinent to ask: Will the competent teacher ever suffer an "excessive nervous mental strain" in imparting instruction? Will he not rather impart instruction with the same ease and as naturally as he re- spires?

WASTE OF LETTERS.

TACHYGRAPHY *versus* PHONOGRAPHY.

editorial article in the MONTHLY, titled "Waste of Letters," has d and given expression to a restless r relief from the drudgery of writ- ch will not be fully satisfied till etual means of avoiding this toil i pointed out. The problem is, e three fourths or more of the la- ime now spent in writing." Can ne? Is there not some serious k to all success gained in this he Chester (Vt.) correspondent, . C. T." has shown a way worthy leration. If there is any hope of o the editor, the lawyer, the cler- and all classes of literary and bus- n three-fourths of their present t of writing, every means which

promises success deserves a candid consid- eration.

Rev. Mr. T. refers us to Phonography, invented and published by Isaac Pitman, of England. This system has claims, and they have been for twenty years urged upon lit- erary men. The writer of this article was for many years a teacher of that system, and labored devotedly for its general in- troduction. If ten years of fruitless toil and bitter sacrifice entitle him to speak, he must in sorrow confess that he has no hope of relief from this quarter. Hun- dreds, aye, thousands of persons have tried this system and abandoned it forever. Five hundred thousand text books have, I suppose, been sold in this country alone, devoted to this system. Five thousand

teachers have, I estimate, attempted its introduction. And what is the result? The text books lie untouched, and the teachers are silent. It is not true, as our correspondent supposes, that thousands now use this style for correspondence. There was a time when it may have been true; but they have long since put down their phonographic pens, and will never take them up again. Our correspondent writes his sermons in this way, and supposes that multitudes of other ministers do the same. Here again he is mistaken. I, too, supposed so once; but the number is really small. During the last five years, I have not been able to find fifty ministers who so write their sermons, and I have more than ordinary facilities for ascertaining.

I say these things, because success in the grand issue demands a rational view of the field. The introduction of Phonography into schools is advocated by Mr. T. This would be done, with a practicable system; but nearly all schools have abandoned the effort after a brief trial. The Waltham (Mass.) public High School has been noted for teaching the art for ten years, and to-day they can not number six rapid writers among their pupils. But I must draw a veil over these disclosures. If I should tell half that *I know* concerning the utter and unmitigated failures to introduce the art successfully, I should destroy the confidence of many of your readers in the possibility of success by any style of brief writing. I do not wish to do this. I believe success is possible. I believe that we have now in Tachygraphy, or Lindsley's phonetic shorthand, a style as much more practicable than Mr. Pitman's system as that is better

than the rude stenography adopted days of Cicero.

Rev. Mr. T. says "it is true; system (Pitman's) is somewhat difficult acquisition." Such is not the case with Tachygraphy. It can be mastered easily than common longhand. In this, its simplest style can be written as rapidly as the corresponding phonography. Again, it is vastly more legible than phonography—quite as legible as the best-written longhand written by writers and teachers of Phonography everywhere taking up this new art. They advocate it with an enthusiasm proportioned to their former disappointment. The leading principles of the new system are, First, *Continuity*. The signs and vowels are joined in the outline, which adds greatly to the speed of the system. Secondly, *Definiteness*. Every letter has its own form, instead of depending on the accident of position, as the vowels in Pitman do. Thirdly, *Simplicity*. Arbitrary word signs and contractions are avoided (in the common style), and the letters that form the word (when separately pronounced) are written one after another, in the same natural, graceful form as in the ordinary handwriting. Speed is gained by using a simple letter stroke instead of the old letters which require three to seven strokes, and by omitting all silent letters.

If one-half the effort had been bestowed on this new system which has been neglected during the last twenty years, on the introduction of Tachygraphy, the country would have been full of rapid writers, the art would have flourished long ago in all our schools, and the drudgery of writing have been banished for ever.

ANCIENT PAPER.

IN examining a mass of rolls at the Record Office, dated 1388, Mr. Toulmin Smith has made the discovery that linen paper was thus early used in England. The quality is peculiar, and is apparently an imitation of the texture of vellum. It

is as durable as vellum, and after a hundred years of very bad treatment proved itself to be equally valuable for the preservation of public records. The discovery raises the question as to the date of the first paper manufactured in Eng-

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WORK AND HOME INFLUENCE.

“One of the chief difficulties with which an American teacher has to contend, is the apathy of parents.” So an English writer. Is he right? American phrenology ignore the oriloprogenitiveness? Do we not abies till we induce an inflammation of infantile cuticle? Even onal matters, do we not send our hool with as substantial a lunch- itish gastric would require, and r girls with *bon-bons* till they ri- an demoiselles and grow beauti- with dyspepsia? And yet, the s not inexcusable. Schools are , text-books are cheap; our ed- facilities are not neglected. But it their boys and girls to school, sons seem to think their respon- ded, and that parental solicitude nate at nine o'clock in the morn- y are confident that the means tion have been provided, and, not philosophically, they leave the hand of providence and the he pedagogue.

gree of apathy is not the result indifference. Apathy is caused, sign writer, of whose views and s we avail ourselves, by the im- ity of forming a correct estimate il's progress, or of the real char- ie teaching in any school. Fla- lessness on the part of teachers it ly too easy to discover, and even s in discipline and management ed no extraordinary skill to de- it is very seldom that a parent ain how far the system under pupil is trained is good or bad,

and whether his progress is real or only apparent.

Hard as it is for a parent to know the kind of instruction and training which his son is receiving, it is harder still to make him know and understand the extent of his son's capacity, or incapacity. It takes a long time to convince a man that his son is a dunce, that he has a weak intellect, or a bad disposition. We are as blind to our children's faults as we are to our own; perhaps because they *are* our own. When Frank is backward in French, it is because Monsieur is not a good teacher. It is never taken into account that Frank is an idle dog, who spends the better half of his French lesson in studying the New York Ledger, or in practicing “freehand drawing,” till the pictorial embellishments of Fasquelle's text make it a “budget of fun.” “Boys is boys,” says his Aunt Huldah, extenuatingly, and, taking exceptions to her grammar, we assent to her truism. But if that excuses their frivolity, may it not also have much to do with their ignorance?

But how is the co-operation of the teacher and the parent to be established? Only by making the parent thoroughly aware of the actual capacity of his son, as well as of the actual worth of the education he is receiving. This can be effected by a system of periodical *written examinations*. In saying so, we may not appear to be propounding anything new. Many teachers are in the habit of systematically examining their pupils in writing, on the work of a half year, or of a shorter or a longer period. It is therefore necessary to add, as distinctive requirements, that each examination should embrace all the subjects taught in the school; and that *each boy's written papers,—exactly as they came from his hands,—should be regularly sent to his parents or guardians*, accompanied by printed copies of the questions, having the proper numerical values attached to each answer.

The questions should be printed on sheets having a double column in the mar-

gin. In one of these columns enter the *maximum* value which each question can obtain. Leave the other column blank, for the teacher to insert in it, opposite to each question, the proportion of the maximum-value allotted to the pupil's answer. The teacher should make no marks or corrections on the manuscript papers. He should examine them, compare them with one another when necessary, and enter the values without note, comment, or emendation of any kind. Whatever comment or explanation is necessary, should be made in a special report upon each boy's papers, accompanied by a statement of his aggregate value in all the departments of his examination.

Let the *maximum* value for each subject be 100. Any boy's allotted value in one subject, therefore, is an exact percentage, showing his *special* proficiency in that subject. By comparing his percentage in any two or more subjects, we ascertain his *comparative* proficiency therein. By striking the average of his percentages, we ascertain his *general* proficiency in all the subjects which he is studying. These results obviously enable us at once to compare the working of one pupil with that of the others in his class; but, still further, by taking the average of each class, either in one subject or in all, we are able to institute a comparison. Thus we are able to call in the aid of a wholesome rivalry, between pupil and pupil, and between class and class.

The great recommendation of the system, however, is, that it keeps each parent constantly informed regarding the pupil's mental state, and thus keeps up a constant home interest in his progress. He will soon discover his strong and his weak points. He has before him a quarterly transcript of the pupil's mind, which is as valuable, as an intellectual report, as a quarterly photograph would be for showing his robustness and personal appearance.

The frequency of the examinations, and the sending home quarterly of the ques-

tions and answers would be against fraud. But a far more check could in practice be put on the alternate quarterly exam (half-yearly) all the papers set by independent examiners, and examine, not merely on the preceding quarter, but on the preceding half-year. On these the passages selected for trial the questions to be asked, would to teachers and to pupils, until the examination. The answer without the aid of books, or note of any kind, would be a guarantee of good faith of all parties concerned. Why not have all the examinations conducted by these examiners? This is a valid reason, that the first teacher is to examine on his own will give greater interest, greater attention, to his daily lessons. Pupils can not tell which day the teacher may select in his examination. They are, therefore, constrained to every day's work. The teacher can tell what passage may be selected by the examiner. He is therefore equally with his pupils, to attend to every day's work, and not to give only to those parts of the work which he may himself intend to examine.

This system would establish a better relation between the parent and school, and give them compact into all its plans, enabling the parent to see once all its excellencies and its defects, and to suggest improvements, either in the general arrangements, or in particular details. This system would of course be most valuable in a school of limited numbers, where a proper division of labor, thereby to prevent its adaptation to public schools of New York. There can be little doubt that if adopted, it would give an immense impetus to truly intellectual training.

CAL INSTRUMENTS FOR SCHOOLS.

in the schoolroom, music is equally valuable as a study and as a recreation, and becoming appreciated as a means of mental, and physical culture.

Chief obstacles to the general use of music in schools have been the difficulty of teaching it without the aid of a suitable instrument, and the considerable expense involved; the cost of a good piano, placing it out of the reach of many, while the various reed instruments, proportionately less prices, have often been untimely. Recently, however, an instrument of the latter class has appeared, is worthy of high commendation, it seems to be a suitable instrument, moderate cost, we feel that in directing attention to it, and pointing out its peculiarities, we shall be advancing the interests of the schools. We allude to the Mason & "Cabinet Organs." In these instruments the tone is produced by a vibratonic tongue, or "reed," as in the organ, but with a difference in the length and thickness, insuring better

The quality of voice is remarkable, round, smooth and free from the harshness of tone by which the reed is characterized.

In other respects also improvements have been made; but we particularly advert to only a few points, showing the advantages of the cabinet organ as a school instrument.

Usually, one of the first objects in musical instruction is to give the learner correct and accurate ideas of what is technically termed the *pitch* of musical tones. There is no worse musical fault than singing out of tune, it is evidently the greatest importance that the ear and organs of the pupils should, from the beginning, be correctly and carefully trained. This must be done by the constant attention of a correct model. For this the teacher's voice can not be relied upon; it would be too great a strain on his vocal organs, and, moreover,

very few are sufficiently accurate in this respect to serve as models for imitation. On the other hand, if an instrument is good and in tune, it can be depended upon for something like mathematical accuracy in pitch. The piano, manifestly, is too liable to be out of tune. It is easily affected by changes in the temperature and humidity of the atmosphere, and to be kept in tune requires a degree of attention which in most schools is impracticable.

Now, it is one of the merits of the Cabinet Organs, and it will be seen that it is a great one, that their tones, being produced by reeds, have very little liability to vary in pitch. They are not affected in any material degree by atmospheric changes. Hence this instrument is an appropriate model with which to train the ear, as it admirably retains its accuracy. In one of the musical journals, the experienced teacher Mr. George F. Root alludes to this subject, stating that he has observed much more accuracy in pitch in the singing of those who while studying music had practiced with an instrument not liable to be out of tune.

We have enlarged upon this one advantage of the Cabinet Organs, because it will not be likely to receive the attention which more obvious features will secure. But it has other advantages,—great power of expression, quickness of utterance, and a steadiness and roundness of tone admirably adapted to sustain and guide the voice and illustrate differences in musical rhythm.

Affording these advantages at a moderate cost, the Cabinet Organ is certainly worthy the attention of all who are interested in school music.

CALORIC IN THE SCHOOLROOM.

IN the article "Ventilating and Warming," our contributor makes some strictures on prevalent practices in the warming of rooms, worthy a careful consideration. We are so frequently warned of the effects of impure, poisonous air, and it is so obvious and so obnoxious to the senses, that

few except the most ignorant and most stupidly reckless persons can willfully expose themselves to its influences. How to ventilate a room is a question often asked and often answered; how to warm a room, is an inquiry seldom heard unless the mercury is falling in the thermometer or anthracite rising in the prices-current.

But, in reality, an atmosphere improperly warmed—as it must necessarily be when almost any one of our modern expedients is resorted to—is scarcely less deleterious than when weighted with carbonic gas and pulmonary poisons. Just now, Jack Frost

and his myrmidons, the coal-dealers, have no especial claims on our attention. The time of the raking of cinders has past; the era of mosquito-nets and palm-leaf fans has arrived. But Chronos, who is now conscripting flowers, will soon demand tribute in Leligh. We really hope that, meantime, the commissaries and inspectors in the school department will give the subject a moiety of the attention it deserves, and that the warming of our schoolhouses may not be left entirely to the convenience and caprice of those on whom such an important duty devolves.

EDITORIAL CORRESPONDENCE.

PORT JERVIS, N. Y., May 29, 1865.

MR. EDITOR:—The author of the article "Rudimental Music" judges in my opinion very harshly on established systems in Music and Musical Instruction Books. He disapproves of the term "natural." The scale of C is the model of formation for all other scales. To avoid new denominations, sharps and flats have been introduced. As the original model scale, the scale of C major becomes to the pupil the most natural scale, although it is no more natural than B flat minor, or any other. An illegitimate child is called a natural child, although no less natural than any other child; so too in the case of "naturalized" persons who lived in the United States for years and years without taking out their "first paper." A sharp or flat naturalized, becomes one of the original sounds of the scale of C major, and therefore the term Natural answers exactly the idea and the purpose.

The author further says, "It is wrong to give beginners the impression that sharps and flats represent black keys." No instruction book to my knowledge ever taught such a theory, nor did teachers unless they were as ignorant as their pupils; but as B sharp and E sharp occur but in pieces which the pupil plays after many years of tuition, B sharp and E sharp are forgotten, while the others are remembered.

Further: "Too much science is crammed into Instruction Books." If the author had said "Science is too much crammed into Instruction Books," nobody would doubt his assertion. But his further de-

monstrations show that he actually means that science should be spared to the pupil until he is a "prima vista" reader. Now, I not only think but know, by experience, that theory is a twin sister of practical knowledge and that they should never be separated: they can go hand in hand without retarding mutual progress.

The writer can not understand, as he says, how songs can be taught with piano accompaniment without previous instruction in Vocal Music. The process is simple. A proper theoretico-practical training on the piano will and must develop the "musical ear," which development is one of the most important objects of vocal instruction. Thus the pupil will be enabled to sing correctly, although perhaps with a weak and practically little developed voice. Just as well might the author have wondered how a person can keep time in dancing without previous instruction in quavers and semiquavers. "Instruction books" we are told, "are not complimentary to teachers." They need not be; they are, if required, dictionaries for the teachers and grammars for the pupil, and that is what they are intended to be.

Despite all these incongruities the author has made some very good and useful remarks, among which are, for instance, the want of a system of fingering, on the need of a better name for the two pedals in use, method of writing from dictation and memory, and method of teaching transposition. These wants can easily be supplied. But the effect of such improvements depends on im-

conditions which are generally not and which the author has not men-

Do not tear down a building that harm, although it has many defects before you can put a better one in its place. If you name the disease, name the cure. I for one am willing to do so as long as it is done upon a sound basis.

A. E.
The article referred to did not purport to be a comprehensive system of music-teaching, but, rather a protest against some of the most common errors of teachers, and only tended to remove those errors.

The reviewer who dislikes this negative character will be welcome whenever he comes with something positive and instead. —J. W. H. O.]

NEWARK, N. J., June 3, 1865.

EDITOR, —A great many improvements have been made in the method of instruction in almost every department of education; we are supplied with text-books of all kinds, teachers are more adapted to their occupation, and schools are therefore becoming more numerous and more numerous.

The department of education seems to have its full share of attention except in the department of penmanship, which, we must acknowledge, is neglected, not only in our common schools but in our academies; very little attention is given to this department.

In almost all our institutions the student is left to himself in acquiring this skill; the only institutions that teach it are the commercial colleges, and not the more general instruction. It is not given an important place in the method of instruction in every common school and academy, that every boy and girl in the country may acquire a rapid and elegant style of writing.

We are a nation of scribes, but have few penmen. The tendencies of the

age, however, are progressive, and we are confident that as the community—particularly the educational community—feels the importance of a more thorough and systematic training in this branch, the more it will be taught, appreciated and perfected.

We want teachers who can execute good penmanship, and teach it on scientific principles—giving a “why and wherefore” for every curve, line and angle which they present.

Good penmanship is an accomplishment which should not be passed over. It can be easily acquired under the guidance of a skillful teacher, and should be considered an important element in an education of every kind. Every teacher should endeavor to perfect his penmanship; study some system, and be able to conduct a class by black-board elucidations. Copy-books can be used successfully when they are accompanied with oral instruction, and the errors of students carefully pointed out and corrected. Position and movement must be thoroughly explained, and simple exercises given each student until he has acquired a free use of the pen.

The *slope* of letters, *spacing*, *shading*, *height*, etc., can be explained on the black-board, the most common faults of the class drawn together with correct forms, and the differences pointed out.

By this means, as the student progresses in ease and rapidity of execution, his taste becomes cultivated, he readily acquires the correct forms which are presented to him, and becomes, in a short time, a rapid and correct penman.

Will teachers take the matter in charge and see that a more thorough course is adopted in this department? If so, we may expect to see a great change in the penmanship of the country, which will be in keeping with the requirements of the age.

G. A. G.

EDUCATIONAL INTELLIGENCE.

ESOTA.—Some time ago Hon. D. C. State Superintendent of Public Instruction, called a convention of the County Superintendents and County Examiners of the Schools of the State, for mutual information, and the consideration of important matters affecting the interests of the school system. The convention was the 28th and 29th ultimo. Following, among other subjects, were discussed, and appropriately acted on:—The

best methods of conducting Teachers' Institutes; the means by which the visitations of schools by Superintendents may be made the most useful to the schools; the best methods of conducting the examinations of teachers; the relations of the Teachers' Institutes and of the Normal School, to the Common School system of the State, and how these agencies are made to perform their part in the improvement of that system; means to improve the condition of the school houses of the

State; measures for arousing public attention to the present condition of the Common Schools. Gentlemen of experience and ability had prepared papers upon some of these subjects, which, with the discussions following them, were interesting and valuable.

The examination of the State Normal School took place on the 27th and 28th ultimo. During this examination every opportunity was afforded for showing the methods of teaching adopted, that all might become thoroughly acquainted with the organization and objects of the institution—including the operation of the Model School. The examination was highly creditable.

Minnesota is moving in the right direction, and bids fair to rival some of her Eastern sisters at no very distant day.

NEW YORK.—Mr. B. S. Gregory, of Jamesville, School Commissioner in Onondaga County, recently made some valuable advisory suggestions to the teachers of the Third Commissioner District of his county. They are adapted to any locality, hence we give them in full:

1.—In the morning be at your schoolroom at least twenty-five minutes before nine o'clock.

2.—Have order commence the moment the bell has rung, and teach your pupils to enter and retire from the room in a quiet and orderly manner.

3.—See that the schoolroom is thoroughly swept at least once every day, and the furniture properly arranged.

4.—Allow no chewing of gum, or eating in school-time.

5.—Teachers are apt to give too long lessons; give *short* lessons, and require them to be *thoroughly* learned.

6.—Have a written programme of exercises posted in the room, and follow it to the letter.

7.—Have all your classes (except the advanced class) read their spelling lessons in the class before spelling; and in spelling, the pupil should pronounce the word after the teacher, and each syllable should be separately pronounced; I would allow my pupils to spell but *once* on a word,—the first effort is a test of knowledge, the second is mere guess-work, and a waste of time.

8.—In primary reading endeavor to have the pupil learn the words at sight, rather than by spelling them out.

9.—In your other reading classes have your pupils thoroughly understand the names and uses of all punctuation marks, and always observe them in reading.

10.—The common faults in reading are neglecting pauses, speaking too low, indistinct articulation, and reading too fast. To obviate this difficulty I would advise concert reading each day, of about five minutes to a class.

11.—Be very particular in making your entries of attendance in the register correctly,—keep your register neat and clean,

and make your entries with pen and ink; the appearance of the register is generally an index of the personal neatness of the teacher.

12.—Never allow a pupil to interrupt you when engaged in hearing a class spell or recite, nor to ask questions so as to be heard by the school. If a pupil desires information, let him indicate it by some sign generally understood by pupils and teacher, and the latter should promptly attend to these calls when made at the proper time.

We are informed that the doors of the State Agricultural College, at Ovid, N.Y., have been closed. The State will doubtless use the buildings for some kind of an asylum.

PENNSYLVANIA.—The Legislature at its last session enacted, and it is now the law, "that twenty-two days shall be held to be a school month, and that two Saturdays in each month, as the proper board shall designate, which two Saturdays shall be held to be a part of the school month, may, at the discretion, and by an affirmative vote of a majority of all the members of the board of directors, or controllers, be appropriated to institutes for the improvement of the teachers of the said district: Provided, That in districts, in which the schools are, or shall be, kept open, and in operation, the maximum term now allowed by law, and the teachers employed by the year, the foregoing clause as to the number of days in the school month shall not apply any further, than that the reports and statistics of the schools shall be kept in accordance therewith, and that district institutes may be held as thereby directed: all acts or parts of acts, inconsistent herewith, are hereby repealed."

This amendment leaves it with the board of directors to decide whether or not a district institute shall be held on every alternate Saturday. The law still stands "that no school shall be kept open for purposes of ordinary instruction on Saturday." Therefore, if there is no institute it will take the teacher four weeks and two days to teach a month. If two institutes are held each month, the month will be completed in four weeks.

Another amendment fixes the age at which pupils may be admitted to the public schools at *six* instead of five years.

The Legislature of the Keystone State has done a noble act in assuming the guardianship of the destitute orphan children of her soldiers and sailors who have fallen in war. Provision is made for furnishing them with homes and instruction in boarding schools, and in some of the benevolent institutions, as Orphans' Homes, till they arrive at the age of sixteen years, when, at the request of themselves or friends, they may be apprenticed for the remainder of their minority. Hon. Thomas H. Burrowes, formerly State Superintendent of Public Instruction, and editor of the *Pennsylvania School Journal*,

tendent of the enterprise, and in this important labor of love and to these "children of the Republic faithfully and wisely discharged, illegals for orphans, in Philadelphia, bers five hundred and sixty-three in increase of more than three hundred 1857.

MASSACHUSETTS.—The American Medical Association at its last session, assigned the Tuesday in May for the next annual meeting. President, D. Humphrey Storer, Massachusetts; Vice-Presidents, Q. F. of Indiana, S. O. Almy, of Ohio, T. of Rhode Island, W. P. Johnson, of Columbia; Assistant-Secretary, Morgan, of Baltimore.

HAMPSHIRE.—The report of the Board of Education for the year ending 1857, is a document of 364 pages, made up of the reports of the twelve Commissioners, together with extracts from the reports of the superintending officers of the several towns. The Suggestions needed improvements in the system, and urges, with force and emphasis, the importance of making some provision for the better qualification of teachers. It has no school journal, no normal school, and no institute system. The vicious and practice of praising and criticizing individual teachers in public reports, in many of the town returns. The Hon. and original Shirley, of Andover, very informally informs the Board that "if there were no parents, teachers would have difficulty!"

The American Institute of Instruction will hold its next annual session at New Haven, August 15, 16, 17.

KENTUCKY.—The Bransford Seminary, Owensboro', Kentucky, were erected by the liberality of Benjamin Bransford, at 27,000. Professor Bowden recently opened a school in these buildings with prospects of success. He is a scholar and a worthy gentleman.

MEASURES FOR THE DEAF AND DUMB.—An important measure for the benefit of the deaf and dumb has been consummated by the establishment of a college at Washington, under the Presidency of Edward A. M., a son of the distinguished philanthropist, who was so long at the head of the Hartford Institution. Arrangements have been made for a thorough instruction under competent professional instructors, and the institution is now under the control of a Board of Directors, of which Amos Kendall is at the head.

FREE SCHOOLS IN LOUISIANA.—The Board of Education for Freedmen in the State of the Gulf has issued its first report for nearly a year's operations. We learn from it that on the 1st of January, there were 95 schools, 162 teachers, 1,000 pupils, besides whom there were 1,000 adults under instruction in night

and Sunday schools. Of the children, 2,103 were learning the alphabet; 8,301 spelling; 7,623 reading; 4,623 were studying mental arithmetic, 1,223 practical arithmetic, 1,338 geography, 283 grammar; 3,833 were writing on slates, and 1,108 were writing in copy books.

ILLINOIS.—The National Lincoln Monument Association, at a meeting recently held in Springfield, Ill., unanimously resolved to invite the teachers and pupils of the public schools in the United States to co-operate in the enterprise of erecting a national monument to the memory of the late President in that city.

CALIFORNIA.—The current number of the *Teacher*—one of the best of our exchanges—contains a paper on the "Geography of California" giving much important information concerning the Pacific coast. The State Normal School is making good progress.

FRANCE.—The efforts on the part of the liberal party to introduce a measure calling for gratuitous and obligatory instruction in France, have resulted in pitiable defeat. This most essential of all reforms, which was proclaimed in principle by the Chief of the State in grandiose fashion in his late discourse from the throne, and which was accepted with all its consequences by M. Duray, the Minister of Public Instruction, in a report which is admitted to be completely irrefutable, was entirely extinguished by the voices of the legislative assembly, only seventeen out of two hundred and twenty voting for it. Only the day after the opening of the present session by the Empress, a very intelligent Parisian lady, in speaking of the imperial phrase on the subject—"In a system of universal suffrage it is essential that every citizen should know how to read and write,"—said: "You will see that these are the merest words, and that no steps will be taken to advance the enlightenment of the people, for to their ignorance is due the duration of the empire."

SIBERIA.—A Russian merchant, M. Sidorenko, who has acquired an enormous fortune in Siberia, has given the sum of 120,000 roubles and the produce of a vast auriferous territory towards the foundation of a university at Tobolsk. A Russian journal, which seemed to throw some doubts upon the realization of his scheme, only produced the effect of making him send another sum of 20,000 roubles and two huge gold nuggets to the government towards the furtherance of the plan. There is no reason why, with this enormous sum, and the 50,000 roubles contributed for the same object by M. Demidoff in 1803 (a sum which, untouched since, has now increased to 75,000 roubles), a Tobolsk university should not in reality be founded soon.

Eight thousand school-houses have been erected in Russia since the emancipation of the serfs took place.

CURRENT PUBLICATIONS.

WE observe in most text books now in use on Astronomy, too many attempts to present matters in a popular light at the expense of accuracy and completeness. Doubtless this has been owing in some measure to the inferior grade of many of our colleges. Now, however, such institutions are being placed upon a firmer basis, and demand is made for works of more thorough and practical character. Prof. Loomis' has, we think, supplied the want. To those who have used his other works, and are acquainted with the peculiar force of his method, the treatise on astronomy will recommend itself. He makes no effort at popular simplicity. The subject is treated in a dignified and comprehensive manner, so that the student who reads the book attentively may gain a distinct apprehension of the subject. The work is of advanced character, intended to succeed a full course of mathematics, and is specially adapted to the higher classes in colleges. It is provided with carefully arranged tables and is illustrated with excellent plates and many woodcuts. The style is remarkably precise. The work is a fitting close to Professor Loomis's series.

The author of "John Halifax, Gentleman," has given us a new book,* which is well worthy of the high reputation of its author. It is a high-toned, moral tale; exceedingly well written, and interesting throughout. Its principal personages are Dr. Arnold Grey, the Head-Master of Saint Bede's, one of the most ancient of the minor colleges of Avonsbridge, and Christian Oakley, a poor Governess, who afterward became Mrs. Grey; Edwin Uniacke, a wild student, has considerable part in the story. The book is full of pleasant allusions to college life in Great Britain. To the teacher it will prove specially interesting and suggestive. With all its other merits, the story ends well. It is printed and bound in the very best style of its famous publishers.

Good intentions are always praiseworthy—never more so than when the intention is to make a good book. The author of *The Blade and the Ear* is one of the staid writers who, having a good purpose, work industriously for its accomplishment. His book³ is a moral missile aimed at the young men of this degenerate age and per-

verse generation. "A youth once" says the author, with incomparable unousness, "I know full well both thations and the enticements of that p life." As we can not call to mind th of any writer who prior to becoming thior had not been a youth once him are not able to perceive that our aut claim greater wisdom or infallibility t compeers possess. Do we misunderstan Does he mean merely that he was o s if, and that he is now in his dotage c himself? Perhaps so. A man sure not act rationally when, assuming t sede the "moral mentors in danger o sight of the welfare of the" inexepe he hesitates not to entertain his u ticated read-rs with the vulgar dew by "an observer," of a fashionable v place, and thus in an indirect mann liarizes them with coarse expression terms, and the vile weeds of rhetori should be tolerated only, if at all, in, houses and police-gazettes. To atc haps, for this dereliction, our Men where employs ecclesiastical term prayer-meeting phraseology with gr dom. He has collated many anec distinguished men and brief passag tive to their lives and principles, w be found both interesting and ins We have implied that the author's is commendable; we may add that lieve the general influence of his w be salutary and elevating.

Those teachers have taken a mos tant step who recognize the principl geography the natural features of t should be studied before the civil c and those facts connected with civil tions; that physical geography fo basis of civil geography, and that are connected as foundation and sup ture, and that both are to be consi their logical order and connection would become acquainted with the prehensive and magnificent science graphy in the true import of the Next in importance to the recogri these principles, and as it were a lo quence and necessary accompanim suit able means of illustration: ar happily are we provided for in this by the elegant and accurate Wall l Guyot. These maps enable us to m most important advancement in t geography that has yet been made country. With them the skillful can do more in a fortnight towar the pupil correct ideas of geographi can be done in a year by the old-f question-and-answer system without maps.

(1) A TREATISE ON ASTRONOMY. By ELIAS LOOMIS, LL. D., Professor of Natural Philosophy and Astronomy in Yale College. New York: Harper & Brothers. 8vo, pp. 338. \$2.50.

(2) CHRISTIAN'S MISTAKE. By the Author of "John Halifax, Gentleman." New York: Harper & Brothers. pp. 260. \$1.50.

(3) THE BLADE AND THE EAR. Thoughts for a Young Man. By A. B. MUZZEY. Boston: Wm. V. Spencer. 16mo., pp. 223. \$1.

ninent among these maps, and worth any good school than the cost of the series, is the Map of the World, in Mercator's projection. By an ad-plan of representation, this map (6 ft. by 84) shows all the most important facts in geography—those which are the basis of all the others. Would the distribution of the lands and seas, and their relative proportions? and definite idea of these facts may be obtained in an hour. Would we teach the form of all the lands, and of the oceans, absolute and relative areas? All is brought to the eye in the most graphic manner.

Would we teach the position, direction and comparative altitude of all important systems of the world, and accompanying table lands? It may be done most effectively and rapidly, and by means of this map, not occupying more time than is usually spent in looking at the mountains of a single grand mountain on an ordinary map. Would we teach the position of all the plains of the world, their real and relative area? A single glance is enough to accomplish the work. In a very short time we may teach and see where are all the water sheds, slopes, river systems; and the ocean currents and waves are delineated with a grand accuracy unsurpassed in any map. In connection with these are faithful representations of the boundaries of countries, location of cities, names of countries, relation of population, area, and all other details which are placed on a map of this character. It is due to the cause of science, of education, and to him upon whom the title of Humboldt and of Ritter has justly fallen, to labor to secure the publication of the Map of the World, at least, as a good school in the United States.

MAP OF THE WORLD, Mercator's Projection, one of the series of GEOGRAPHICAL AND POLITICAL MAPS for schools. New York and Philadelphia: J. B. BARNHART, BANCROFT & CO. \$12.

The terms "Parlor Book" and "Home Magazine" are almost synonymous with insipidity. A marked exception to the proverbial character of the home-books is found in the new publication of Messrs. Scribner and Co., "Hours at Home," a monthly magazine, edited by J. M. Sherwood. The two numbers already issued indicate that it will endeavour to represent the religious element of literature, but they contain historical and biographical sketches, moral tales, and essays on various topics. The tone is elevated and dignified. We welcome "Hours at Home" as a desirable accession to the line of literary periodicals, believing that it will be free from the vulgarity and frivolity by which American literature is so strongly characterized.

New music is appearing with unabated frequency. Oliver Ditson & Co., Boston, have lately published the following pieces of new music: Children's March, Penitence, Communion, a choice morceau from Beethoven's Symphonies; "O Lord veil not thy face," a sacred quartet—all for the Organ. And for the Piano: Funeral March, with a portrait of Mr. Lincoln; Schubert's Serenade; Spalding's Whip-Poor-Will Polka. Also the following ballads: "Many a Time and Oft;" "Name of him I Love;" "Home Once More;" "Good Mille Fealtie" (a hundred thousand welcomes); "You'll not be Long Away, be Sure;" "The Fall of Sumpter," with suggestive illustration; "I've Struck He;" "Our Grandfathers' Day," by Tony Pastor; "Bantling"—these last being comic songs.

William Hall & Sons, 543 Broadway, N. Y., have issued "Eastonia Polka;" "Joke Polka;" "Wedding Lancers;" two songs, "I ne'er again will leave thee," and "Meditation."

William Jennings Demorest, 29 Beekman Street, N. Y., has published "The Nation in Tears," by Professor Konrad Trener, with three full page illustrations; "Petroleum's What's the Matter;" "Love on the Brain," by Mrs. Parkhurst.

SCIENCE AND THE ARTS.

A committee of the Academy of Sciences has very favorably reported on a new automatic pressure regulator which M. Rottaud has submitted to his mechanical roaster, and the committee says, has worked for years with the precision of a piece of apparatus and the certainty of a machine. The combustion of the gas is regulated by balance-valves on the rough which the air is introduced, and valves are automatically governed by a motor. This regulator consists of a

mercury gauge, the closed branch of which is attached to a fixed support, while the cistern is freely suspended to the beam of a balance; the varying weight in this branch will cause the beam to assume different positions, depending on the temperature of the apparatus, which variation of position may be used to govern the valve. In order to prevent the barometric changes from affecting the apparatus, the closed end of a syphon barometer, the tube of which is of the same diameter with the gauge, is attached to

the beam, while its cistern is sustained by the fixed support. The barometric changes will then affect these two instruments equally and in opposite directions, and will, consequently, have no effect on the position of the balance beam.

—In the neighborhood of the Caspian Sea, where petroleum-springs are abundant, the inhabitants manufacture fuel by impregnating clay with the combustible fluid; the clods are afterward burned on an ordinary hearth. The Norwegians have long economized the saw-dust of their mills, by incorporating with it a little clay and tar, and molding it into the form of bricks. In England much attention has been given to artificial fuel in many districts, but not with much success, owing to the want of a suitable combustible, which petroleum is, above all others, best adapted to supply.

—In France charcoal is prepared from the refuse of the charcoal furnaces, by mixing it with charred peat or spent tar, and then adding tar or pitch. The materials are ground together and subjected to heat in close vessels, to expel volatile gasses. From seven to nine gallons of tar are mixed with two hundred weight of charcoal powder.

—Professor Gasperis, the director of the observatory at Milan, having discovered a new planet, has determined to make his report on the subject at the anniversary of Dante's birthday, and in honor of the poet, he has christened the new planet Beatrice.

—The fumes of burning coffee are powerful disinfectants. Experiments have been made in Paris to prove this. A quantity of meat was hung up in a closed room until decomposed, and then a chafingdish was introduced and 500 grammes of coffee thrown on the fire; in a few minutes the room was completely disinfected. In another room sulphuretted hydrogen and ammonia were developed, and 90 grammes of coffee destroyed the smell in about half a minute. It is also stated that coffee destroys the smell of musk, castoreum, and assafetida. As a proof that the noxious smells are really decomposed by the fumes of coffee, and not merely overpowered by them, it is stated that the first vapors of the coffee were not smelled at all, and are therefore chemically absorbed, while the other smells gradually diminish as the fumigation continues. The best way to effect this fumigation is to pound the coffee in a mortar, and then strew it on a hot iron plate, which, however, must not be red hot.

—The artificial method of manufacturing ice in hot weather, invented by M. Carre, has proved of actual practical value. He takes two strong iron bottles, connected together with an iron pipe, and nearly fills one with a concentrated solution of ammoniacal gas in water. After connecting the bottles together, and making the joint secure, the one containing the ammonia is put over a fire, while the other dips into water. The action of heat upon the am-

monia drives off the gas, which, able to escape, condenses under mous pressure in the other bottle. When this is effected, the bottle from the fire and cooled, whereupon ammonia in the second vessel rapid the gaseous form and abstract heat from the water by which rounded as to freeze quite a c quantity.

—The western coast of Nor is so much warmer in the winter eastern coast that a winter climate than that of New York city extends north as 65 degrees, corresponding with the middle of Hudson's Bay almost uninhabitable regions of The valley of the Saskatchewan, 52 degrees, one thousand miles n Lake Superior, is very fertile, and live through the winter upon the grasses which it produces.

—Professor R. Bellini, after a long series of experiments on p strychnia and its salts, arrives at that the best antidotes are tannin, tannin, chlorine and the tincture and bromine. The frog-test is not to be trusted, inasmuch as sons produce the tetanic symptom in a lesser degree.

—Lead, people should be often is a slow but powerful poison in a when taken internally, and often are not manifest until too late. Vessels lined with lead for cooking provisions in; also the use of for the conveyance of water, as will dissolve the inside of the pi the presence of some protecting forms an insoluble coating and p ther action; even then there is d simplest precaution is always to water contained in lead pipe be any for use.

—A change of color is now the double star "35 Hercules." vals of variation are very short, as many as three or four in a sh In the autumn of 1862 the colors green and cherry red. In the April they were greenish and pin in May both stars were dull whi gust again apple-green and cherr

—Herschel has recently of spectrum of a shooting star. I near Capella, and was almost as that star. He followed it for m second in its rather slow motion, tained that its spectrum was as a spectrum as that of Capella, a more extended, and, therefore, t sisted of a solid or liquid substan of a gas or incandescent vapor a gins has suggested with regar nebule.

—If we blow a fire it burns m but if we blow a candle it goes o

taken together are a familiar illustration of the influence of temperature upon affinity. In both cases, that of the candle, the burning is a combination of carbon and hydrogen with

Now, cold carbon or hydrogen may not react with oxygen for any length of time without combining with either, but if temperatures are made red-hot, they enter into chemical combination. While the candle is burning, the heat generated by the combustion constantly raises the temperature of the material to the temperature at which combination with oxygen will

take place, and thus the combustion is kept up. But if a current of air of a temperature far below the combustion point is thrown against the flame, the hot vapors are swept away, and others which are rising in their place are so cooled that combination with oxygen no longer continues; in other words, the candle ceases to burn.

On the other hand, when we blow a large fire, the mass of burning combustible is so great that, instead of carbon and hydrogen being cooled, the oxygen is heated, and the combination is made more active; in other words, the fire burns more fiercely.

MISCELLANY.

From a report communicated by the Commissioner of Patents to Congress, it appears that the business has been transacting in any year in the history of the Patent Office, excepting 1859 and 1860; 6,014 patents have been received; 4,170 patents have been granted; 787 caveats have been made; 40 applications made for extension have been granted. Of the issues, 48 English inventors, 37 to French, and sons of other nations.

A singular phenomenon, in the shape of water, has made its appearance in the Valley, Center county, Pa., about three miles from a small place called Horns. The water, has made its appearance in the Hubbsburgh road, covering a hundred acres of land, and varying in depth according to the irregularities of the ground, from ten to thirty feet, some places. The water is said to come up at night. A subterranean stream has burst upward. The water is said to rise a little during the day and rise during the night. It is certainly a great curiosity, never visited by a great many people. That legion of absurdities have been collected by memory-men, each of whom tells of his own. Macklin asserted his system, he could learn anything at once hearing it. This was enough for him, who, at the close of a lecture, uttered the following sentences to Macklin: "That he would be good enough to repeat them, and afterwards repeat them to-morrow. Here is the wondrous non-sense: 'So she went into the garden to cut a leaf to make an apple-pie, and at a time a great she-bear, coming up at her, popped its head into the shop. 'No soap?' So he died, and she prudently married the barber; and there present, the Picinnies, and the Gargelles, and the Grand sum himself, with the little round at top; and they all fell to playing

the game of catch as catch can, till the gunpowder ran out of the heels of their boots."

—Keep your mouth shut when you read, when you write, when you listen, when you are in pain, when you are running, when you are riding, and by all means when you are angry. There is no person in society but will find and acknowledge improvement in health and enjoyment from even a temporary attention to this advice.

—The Emperor Napoleon III. recently had a quiet evening with a few friends. In the course of conversation he remarked that it was very hard to define *savant*. "I don't think so," retorted M. Drouyn de Lhuys; "I propose this definition: A *savant* is a man who knows all that the world doesn't know, and who is ignorant of what all the world knows."

—"Doctor, I want you to prescribe for me." The doctor feels her pulse. "There is nothing the matter, madam; you only need rest." Now, doctor, just look at my tongue! just look at it; look at it! now say, what does it mean?" "I think that needs rest too."

—A judge decides that a husband may open a wife's letters, on the ground that "the husband and wife are one, and the husband is that one!"

—Dr. Franklin meant a good deal when he said, "A good kick out of doors is better than all the rich uncles in the world."

—None are so fond of secrets as those who don't mean to keep them; such persons covet secrets as a spendthrift covets money, for the purpose of circulation.

—Two nations inhabit France: The one dines, sleeps, yawns, listens, and dwells in Paris; the other, thinks, acts, watches, talks, and inhabits the provinces. The latter is led captive by the former, like a snail by a butterfly.

—Dr. Johnson said of a widower who was about to marry, that it was a remark-

able case of the triumph of hope over experience.

—M. Montigny, French Consul in China, in reference to the use of arsenic by the Northern Chinese, says they mingle it with their smoking tobacco. According to missionaries who have lived a long time there, tobacco free from arsenic is not sold. The same witnesses assured the French Consul that the arsenic smokers were stout fellows, with lungs like a blacksmith's bellows, and as rosy as cherubs. The publication of M. Montigny's statement has called out a letter from Dr. Londe, who announces that some years ago, in the course of a discussion at the Academy of Medicine, on the agents to be employed to cure tubercular consumption, he told the assembled doctors that he had found but one successful means of combating this dreadful disease, and that means was the smoking of arsenic. The doctor reaffirms this commendation of the remedy.

—The smallest natural magnet generally possesses the greatest proportion of attractive power. Iron is the only substance principally attracted by the magnet. The degree of magnetic attraction depends on the strength of the magnet itself, the weight and shape of the iron presented to it, the magnetic or unmagnetic state of the body, and the distance between them. All iron bars standing erect or perpendicularly (such as the iron railings before houses) are magnetic, the north pole being at the bottom and the south at the top. It is also a curious fact that the uppermost part of the iron ring around a carriage-wheel attracts the north end of the magnet, and is consequently a south pole, while the lower part of the same iron in contact with the ground, attracts the south end of the needle, and is, therefore, a north pole. Turn the wheel around, half a circle, and the poles immediately become reversed. The power of magnetic attraction resides wholly in the surface of the iron bodies, and is independent of the mass. An empty bombshell will attract as strongly as a solid sphere of the same material. The cutters in gun-loring become magnetic in consequence of being continually rubbed in the same direction. Wedgewood's black ware, which is made of basalt, attracts the magnet strongly.

—A farmer lately thought he would try the virtue of corn in the ear to supply the place of coal. It worked so well that subsequently he purchased a load of coal and tried it by measure in contrast with the corn; and the experiment developed the fact that the corn fuel was the cheapest and the best. The corn and coal were worth the same price per bushel, 50 cents each, and the corn went the furthest, and made the cleanest and best fire.

—Miles Darden was beyond all question the largest man in the world. His height was seven feet six inches—two inches higher than Porter, the celebrated Kentucky giant.

His weight was a fraction over one thousand pounds! It required seventeen men to put him in the coffin. It took over one hundred feet of plank to make his coffin. He measured around the waist six feet and four inches.

—Some years since, a poor factory girl in Lowell, by rigid economy, "laid up" enough to permit her attendance for a short time in the High School of that city. An intense thirst for knowledge was soon awakened, talent evinced, and a resolute purpose formed, "somehow or other," to secure a thorough education. The result is, that factory girl is the first assistant in a popular ladies' seminary in Montreal. A younger brother, in the employment of the same corporation, was encouraged by the noble example of his sister, and still more by the timely and generous offer of pecuniary aid by the present Secretary of the Board of Education, to secure a collegiate education. Since his graduation, this young man has been the successful principal of a High School.

—The modern young lady is a strange compound of dress and nerves—by which we mean those "exquisite susceptibilities" which cause her to shudder when she sees a wash-tub and scream at the sight of a cow. She is a living image made to be waited upon. She sings "divinely," and plays the piano "exquisitely;" but neither one of these affects you as much as the "jabbering of a North American Indian," for it is not half as intelligible. She lounges about in the morning, crochets or embroiders a little, then dresses herself up and promenades for the benefit of some "genteel exquisite." Thus passes her days. Now, you needn't tell me that old bachelors are continually harping on women's faults—that we do not find any such ladies—that they are the same they always were. It is no such thing. It is an uncommon thing, indeed, to find a young lady now-a-days who half pays for the food she eats.

A curious return is regularly obtained in Scotland from above fifty stations of the Meteorological Society,—a return of the number of hours of sunshine. Taking the mean of all these stations, the number of hours of sunshine in the last seven years has been as follows: In 1857, 1,665; in 1858, 1,825; in 1859, 1,817; in 1860, 1,620; in 1861, 1,674; in 1862, 1,568; in 1863, 1,711. The number in 1858 averaged exactly five hours a day throughout the year. In the six months from April to September, the summer half of the year, there were 1,154 hours of sunshine in 1857, 1,261 in 1858, 1,302 in 1859, 1,083 in 1860, 1,094 in 1861, 1,052 in 1862, 1,135 in 1863, 1,230 in 1864. The number in 1858 averaged very nearly seven hours a day in these six months. In the eight years, 1857-1864, the sunniest month was May in three instances; June in three; July in two.

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THE CLAIMS OF SCIENCE UPON THE SCHOOLS.

noe should be taught in our
la, we must be prepared to an-
hy?" and then to answer, "What

Science itself is the knowledge
ation between cause and effect.
ver this relation by observation,
ion, inference, till we arrive at
infant indicates this course as
ture; for he observes the candle,
a finger in the flame, and he in-
t would be better for him not to
in. We find the child at birth
only of pleasure and pain, and a
m of training would be so to rear
life should afford the greatest
happiness with the least admix-
in. This implies such a wise det-
of mind and body that the good
the only true pleasure, and evil
respond to pain. We can, with-
ultly, imagine a mind so well
readily to distinguish between
evil, in their widest sense, and so
l to act upon principle that to do
ong would be almost impossible,
m evil would find no soil to ger-
One trained, for example, for
of argument, to a single virtue
ndustry, would find it actually
be unemployed. The discipline
h minds have undergone is really

It is the development of the
rapidly discerning cause and ef-
being guided by the decision they

Natural science pre eminently
this power. Let us take the
liar example of a tooth, and draw
nces from it. It possesses fangs,
up pointed. It is a double tooth,

a small one. The fangs lead us to infer a
socket for them and a jaw, the jaw a skull
and skeleton, and these a vertebral column,
a nervous cord and brain. From the sharp
point we infer that the animal does not
grind its food, for which a flat rough sur-
face is necessary, but tears it, and there-
fore feeds on flesh. A flesh-tearer necessa-
rily has feet to correspond, it will therefore
be armed with claws; and as the tooth is
very sharp, we infer that the animal feeds
on living prey, is wholly carnivorous, and
that its claws are proportionately sharp.
Being a flesh feeder, we know much of its
digestive organs, which are short compared
with herbivorous animals. It is probably,
therefore, the tooth of some small carniv-
erous quadruped—most likely the tooth of
the domestic cat; and if we have extracted
the tooth beforehand from poor Tab, for
the sake of our inferences, we can speak
with still greater certainty upon this point.
Again, the microscopic structure of a sec-
tion of bone reveals to us long canals sur-
rounded by concentric rings of *lacuna*, and
this structure varies so in different animals,
that the microscopist can readily tell the
animal by its microscopic structure. The
power of inference based on previous
knowledge was exemplified by Owen in
the case of the *Dinornis* in a manner that
made him a demi-god for the time. From
the structure of a single bone, he deter-
mined it first to be that of a bird; and then
built up the typical bird, a fossil giant,
rivaling Sinbad's roc, his inferences being
verified after a few months by the discov-
ery of complete fossil remains. Who can
deny the power and importance of the

mental training indicated in these examples? In the schoolroom, our object-lessons would exemplify such training, given by a teacher who understood his art, while the same lessons in the infant-school should be an invaluable preliminary to science-teaching. All the good to be obtained by object-teaching has not been realized in our schools yet. With them, as with rudimentary subjects, teachers too often have thought their office merely to cram down knowledge, neglectful of the discipline indicated here. Yet, intelligently pursued, these lessons would help children over the "wearisome bitterness of their learning," changing it indeed for an ever-increasing eagerness for knowledge which would count nothing a difficulty that helped to feed an inquiring mind.

In itself the pursuit of science is wholly good. The investigation into nature's laws is simply the search after truth. The student does not aim at confuting cherished doctrines; he aims at understanding truths established, and at discovering new truths. He pursues his steps till he arrives at a law, or till he sees clearly the separation between the knowable and the unknowable. Unlike the ancient philosophers, he neither theorizes nor dogmatizes, nor wastes his life and energies upon the last, but reverently acknowledges what is beyond man, and confines his researches to that which will bring beneficial results. It may be his duty to keep his mind in abeyance for years, or to leave the discovery of a law to which he has pointed his finger, as a legacy to another age. A truly scientific mind cannot be obstinate in opinion, and even a small amount of scientific training saves us from the errors of superstition. The habit of seeking truth is contrary to an ignorant belief in the unknowable. The man of science lives in an illumined sphere greatly enlarged beyond the sphere of the ignorant; he lives, as it were, in a larger world, and therefore may be said to live more. The dark limits of his world, and his conception of the infinite beyond, are also alike extended, and he reveres the unknown. The bounds of the ignorant man's little world are close upon him; the darkness beyond is a subject of blind credulity, blended with terror.

What is seen and what is not so continually opposed to each other. apparent is false, while the real is b This is true in every department of s The uneducated mind lays hold (apparent, satisfied at once, whil disciplined mind seeks deeper for ciples, inferring nothing without su grounds. The child imagines tre posts to flit by him, and he himself still, while riding in a railway c will cry out that the land is moving as the steamboat starts from the pier the world once believed that t moved round the earth. Backwo will tell you how fossils are made trickling of the water through the Our language is full of like instances speak of inspiration of the breath as our breathing in were done with as the same as we talk of a suction and how many are there who upon ing school can explain the vital as the diaphragm and the philosophy of ing? Science rectifies this. The b investigation prevents us from as an assertion as a fact. If we hear t thunder has soured the milk, we s satisfied with the simple evidence t milk is sour. If we have our picked or window broken, and t told it is good for trade, we do truth of the assertion, and would our own way rather to benefit trade. too, our little birds that devour th cious grub, and the pretty spotted bird that preys upon the plant-lou warred against by the farmer, w only the biggest thing, and, for wa little science, slaughters the frien would save his crops of corn and Prizes have been given in our (districts for the largest trophy of p over our sparrows, and in France th have been so cleared of the feathers that, as we hear, importations are place, of English birds, in order to the progress of a chronic blight. takes place in a day when we co be persuaded that Rebecca the changed herself into a swan, an round the castle, three times, even the shaft shot at her was produced dence.

mental discipline upon which we place much stress is a law of nature for development of mind. As the mind expands and grows, so it would be able to take more abundant exercise. Too often, however, it is dwarfed and cramped by injudicious management. Children themselves being ignorant, are rather than delighted with the questionings of their children. We have an instance in a Broadway omnibus the other day. A child, with juvenile vivacity about every strange thing he saw, exclaimed, "Father, father, what is that?" "Mind your own business," was the paternal reply. The boy got the rebuff, and plied his parent with, "Look here, father, what is that?" "Mind your own business, I tell you," was the information vouchsafed. The passage was repeated numberless times in the course of a short ride, and ended an excellent exemplification of scientific training.

One accustomed to meet with children knows how they pine for mental culture. Innumerable opportunities for acquisition of rudimentary science are afforded them without satisfying their unceasing craving after knowledge. They

ask the right to hold an opinion of their own, and wonder if the time will come when they may do so.

What science should we recommend to them? Natural science? mathematical?

As far as the mental culture goes, we are left to the taste of the student to decide what he should study. If he aims at being in and enjoying intellectual company, he will find that nothing comes out of that the more he knows, the more opportunities of enjoyment in science.

A taste for science also is a growth. While we may learn much of geology without a knowledge of algebra, the thorough geologist must be competent in natural philosophy, chemistry, zoology, and physical geography. The sciences are interlinked and interwoven, so that the physiologist or botanist is not merely such, but is able to take a wide view of most things.

However, we must name the foremost and most demanding the study of the young,

we cannot hesitate to mention the laws of health and the laws of wealth; physical and social economy. The first teaches him to know himself, the second to know others. The first tells him *why* he should keep his body in temperance, soberness, and chastity, as the Churchmen say; the second, *why* he should "labor truly to get his own living." We see around us the whole world engaged in one way or another in the great work of the production of the necessaries and comforts of life, to which we give the name of wealth. The stock of wealth depends upon the industry and skill of the producers; and its increase in the future depends upon the increase of our producing powers, that is, of industry, skill, intelligence, and other high qualities. We also observe how this great work of production is divided among the laborers and necessitates interchange, and how proportionate to a high or low possession of the industrial virtues. So we find in individuals and in communities abundance or deficiency of wealth. The dependence of one upon another leads us to consider how much we have to trust one another, and the importance of integrity in all our dealings. Our obligations to our forefathers, and our desire for the prosperity of our children, lead us to the thought of parental duties. And thus, in a manner only hinted at here, yet a pure scientific induction, we reach the great moral laws upon which is founded the superstructure of society. In our country, where health and social affairs are becoming the great topics of conversation, to which even Petroleum interests and Wall-street speculations are secondary, no one needs fear an inability to take his proper place who has made himself master of the laws of both.

The scientific and the uninformed man together are illustrative of the old tale of "Eyes and no Eyes." The first sees *more* in everything he glances at, and everything affords him a larger measure of happiness, while the uninformed man lets things pass, often without seeing them at all. In the course of a life-time, what an amount of happiness—of life itself—is thus lost! To the man of science, truly there are "sermons in stones," and every leaf and flower discourses wisdom.

Imagine a visit to Trenton Falls by a naturalist and a frivolous man, and measure the impression upon each. Accompany them to the Adirondac solitudes, and is it not with pity akin to pain, we see the botanical wonders there waste their glories upon one who might have been taught to understand them? But where does not the scientific man take the vantage? Inland or at the sea-shore, at home or abroad, he has in him a source of happiness, and a means of giving happiness. A sea anemone, or sea cucumber, has associated around it not only a personal history, but all the curious difficulties meeting us in low organisms, of drawing the line between animals and plants.

Nothing, perhaps, more distinguishes the scientific mind from the uninformed, even from the passing intelligent, than the readiness to explain problems, difficult from their very ease. Whales keep under water longer than the lungs of a mammal which they possess can account for. How is it? The zoologist knows at once of the strangely twisted arteries, which supply a reservoir of oxygenated blood ready for service in the circulation. What is the difference between horns and antlers, and what analogy have either with leaves? Why does a dead oyster gape? What are the dif-

ferences between white and red? What is the luminosity of the sea to? What is the natural history of the leech, hydra, aphid or plan? What is meant by "species"? What is meant by the term "alternation of generations"? These are all common things common, that on their recital most would fancy they knew them. Many have heard, indeed talked and criticized a book like Darwin's without understanding it, perhaps without realizing how many have seen their geranium roses destroyed by the aphid, who knew its wonderful career, from its first appearance in the spring, and budding from its sides, without sex, during summer, and last buds, as cold approaches in forming true sexes, and laying egg next year's progeny, but would have no zoological compensation for their mental loss?

In conclusion, the taste for especially natural science, is a health which it is spreading. Mineral specimen cases, and the aquarium, are common. We should foster these, as a combination of physical and intellectual pursuits, and realizing, not the trite desire, a sound mind in a sound body.

THE USE OF GRAPHICS IN EDUCATION.

BY Graphics we here mean Drawing. And the application of drawing, both to the work of acquiring and imparting knowledge is what we mean by the use of graphics in education. As an instrument of knowledge, sight is undoubtedly the most nearly perfect of the senses. Through it we probably acquire more than through any other sense, if not more than through all the others. What we hear, we may soon forget. But *seeing*, truly, *is believing*. The *scenes* through which we pass are seldom obliterated from the memory; but we retain comparatively little of what we merely hear, especially in the earlier periods of life.

And there is also a great advantage in

using the language of form, in connection with all subjects to which it is applicable over that of words alone. This advantage is nearly or quite as great as that of sight over hearing. A single drawing when hastily and roughly executed frequently conveys a clearer conception of an object than whole pages of verbal description, and the drawing may be executed in a moment of time.

Suppose, for an example, that the subject to be explained is a simple mechanical structure of any kind; or suppose the physical features of a country. The dashes of the crayon or the pencil in the hands of one who is apt in the use of the pen will convey to the pupil more

be facts, than hours spent in even days devoted to conning of a book.

Even we are speaking fully within this matter. We are speaking experience as well as from a somewhat observation, and we feel we are doing teachers a service when they commend these hints to their

We are convinced that the art of naming objects and conceptions in the language of form—nature's language—does not receive as much attention in our schools which utility and importance demand.

Not only as a means of communicating but of acquiring and fixing knowledge of the pupil, would we strongly call it to the attention of educators. The best and best method of learning is to draw. A steam-engine, or a water-wheel, a printing-press, next to examining the object itself, is, to delineate them, a part is familiar. The sciences of botany, geology, geography, and all those branches which have to do with the natural world, might be better acquired with vastly greater thoroughness, if, in connection with the teacher and pupil alike made a use of the art of delineation. Even drawing may be taught much more efficiently by the liberal use of the graphical method in anatomy and physiolo-

gy ought not to consider himself a master of his subject, until he can, with ease and grace, represent any portion of the structure with which he is called upon to deal. A student in geography is but an indifferent geographer, unless, with crayon in hand, he can readily sketch any outline of the earth's surface which is the object of study. In this manner, drawing ought to become one of the ruling methods alike of learning on the part of the pupil, and of teaching on the part of the instructor. There may be less words and more forms used with great benefit to the learner, and with far greater satisfaction to the teacher, if he will apply himself to the work.

Drawing, not only *per se*, but as an aid to study and discipline, ought to be a constant accompaniment to the exercises of a student. Children should be practiced in drawing, as soon as they are old enough and strong enough to hold a pen or pencil. They ought to be encouraged to embody their conceptions in visible forms, as well as to express them in words. We believe in the doctrine, that "whoever can learn to write can learn to draw," and that there is no danger of carrying this practice to an extreme. For it is not only a great aid to study and instruction, but it has practical utilitarian tendencies—the value of which cannot be overestimated, even leaving out of the account its influence in the cultivation of the taste.

OBJECT-TEACHING.

LANGUAGES.

II.

As we have shown that Object-Teaching, the analytico-synthetical method of instruction, can be advantageously employed in one or two foreign languages as well as with the mother tongue. We consider the use which can be made of this method, when applied to the study of the mother tongue only.

In the study of grammar that the language becomes an *object* to our

mind, and is analyzed into a great number of facts, from which the laws underlying them are, by observation and comparison, evolved; and to which again these laws, reduced to a logical system, are applied, in the shape of practical rules aiming at a correct and logical use of the language. By such a study of the mother tongue, the pupil is trained to use the latter consciously, no longer instinctively; logically, in-

stead of mechanically. But grammar can not effect this, if not of the right kind. And here it must be stated, that the grammatical text-books now in use in American schools are of little avail, and the study of grammar now carried on in most of our schools is not commensurate with the importance of the subject, nor comparable with that of any other branch of popular education.

The principal shortcomings in these text-books consist in their departing from the old Latin grammar, and in their neglecting the results of modern comparative grammar. It is wrong to style nouns, verbs, adjectives, adverbs, etc., *parts of speech*—they are *kinds of words*. Subject, predicate, and the several kinds of objects, are the real "Parts of Speech." It is faulty to describe *you* as of the second person singular, instead of *thou*; *you* is never any thing but the second person in the plural. It is unmitigated nonsense to speak of a *Potential Mood* in the English language, beside the Subjunctive Mood, when there is no such mood in it. It is not true that English has only three cases: the Nominative, the Possessive, and the Objective; there are certainly two Objective cases—a *Dative*, or a case for the so-called Personal object, and an *Accusative* for the Passive object. It is still worse to call *father's*, *mother's*, etc., the *Possessive case*, and to call *of the father*, *of the mother*, otherwise; it would be a better name to call both the *Genitive case*. What they are pleased to term the *Independent Nominative* is, and ought to be, the *Vocative case*. It is wrong to style *my* and *mine*, *thy* and *thine*, etc., the *Possessive case of the Personal Pronouns*, when they are not so, being in fact adjectives derived from the personal pronouns. *My*, *thy*, *our*, *your*, *their*, are, perhaps, best called *Possessive Adjectives*; *mine*, *thine*, *ours*, *yours*, *theirs*, are *Possessive Pronouns*. It is incorrect to class the *Perfect Tense* with the *Past Tenses*; it is a *Completed Present* or *Second Present*, and bears the same relation to the First Present as the Pluperfect or Second Past bears to the Imperfect or First Past, and as the Second Future bears to the First. And thus we could go on, enumerating blunders committed in

the English grammars now in use. They all owe their origin to the idea that English ought to have a peculiar kind of grammar, instead of the universal or general one, and to a great deficiency of their authors in comparative grammar. If one of your pupils, after having acquired this kind of English grammar, wishes to learn foreign languages, he will have first to unlearn a great portion of the English grammar before he can understand that of other languages; the study of the latter will be much more difficult to him than it ought to be. But, worse than that, it is impossible to master the mother tongue itself according to such a grammar. If you succeed, you do so *in spite of*, not *by means of* your grammar; by your own correct instincts, not by its incorrect rules. If you conjugate, correctly, the Future of *I love*, as follows: *I shall love, thou wilt love, he will love, we shall love, you will love, they will love*; and the Conditional: *I should, thou wouldst, he would, we should, you would, they would love*; and if you, in your practice, distinguish well between these *auxiliary verbs*, and the verbs *I shall, thou shalt, he shall, we shall, you shall, they shall*, which indicate duty, and *I will, thou wilt, he will, we will, you will, they will*, which express intention; if you do that, then you will speak correct Anglo-Saxon, and avoid numerous blunders of American every-day talk; but that, certainly, you have not learned from your school text-books.

Language is spoken logic. Grammar is a theory of applied and exemplified logic, if it is what it ought to be. Every language has one or several means of expressing every category of thought, and may be styled, in scholastic phraseology, a system of categories. Grammar is to exhibit this organism in its entirety; and comparative grammar teaches which of those means of expression are accidental or idiomatic, which are necessary or common to all languages. Therefore a teacher of the grammar of the mother tongue can never be successful, if he be not a student of comparative grammar.

But if he is well versed in this noble science, the grammatical instruction will, under his treatment, become attractive

otive; while it is, under the stem, repulsive, tedious, and of y. Take, for instance, a task in y, such as would be adapted to a middle class in a grammar—on make them compare the *odness, soundness, irksomeness*, etc., and make them find the first, that nouns ending in *ness* are of adjectives only; second, are abstract nouns, denoting the a thing, or a notion. You make other nouns ending in *ness*, and each of these examples confirms the rule. The knowledge of these helps your pupils acquire in this way, later be turned to good ac-

count here, or not—according to the proficiency of your pupils—add words of Anglo-Saxon descent terminating in *ness*, while those of Latin origin do not, and that, therefore, termination in *ness* is a criterion of the Latin origin of the words. You give them examples like *shy, clever, prosperous, harsh, pure, wild*, and many more, from which of these may assume the termination in *ness*, and are, therefore, Latin words, which can not, and which are not. At last you tell them the very conditions to this rule, like *conscientiousness, sociableness*. Treated in this way, the etymological part of the study becomes highly interesting and profitable.

Till a good compendium of grammar shall have been written, the thinking teacher may find out as many as possible of the laws of grammar, following one or two of the great dictionaries.

Another example from books of higher grammar classes: the study of *classification of sentences*. Entirely that useless distinction between *simple, compound, and complex*

What is it good for? What can you make to depend upon it? Can you make it fruitful for the learner's mind? Rather state only two kinds of sentences: *principal* and

Be sure that your pupils understand this distinction. Give them a number of sentences first, and ask at

every one of them whether it can stand independently, or wants another one to hang on. Then you subdivide the principal sentences into three kinds only: *direct speech* (declarative or asserting sentences), *direct question*, and *direct command or wish*, giving them examples, and making them find the differences for themselves, stating the right names, when they have found the same. The next step will be to make your pupils find sentences of each kind, and convert them into the other two kinds. The third step will be to teach them the first three kinds of dependent sentences, *indirect speech*, *indirect question*, and *indirect command or wish*. You do this, again, by giving examples, and making them find the differences between *direct* and *indirect speech*, *direct* and *indirect question*, *direct* and *indirect command or wish*. Then you may state the correct names for them, and make the pupils find examples of each, and convert each of the six previous kinds of sentences into the five others. This is the time to direct their attention to the fact that a dependent sentence of *indirect speech* always presupposes a principal sentence with a notion of *saying*, or *thinking* in it; that one of indirect question refers to a notion of *asking* or *uncertainty*; that one of indirect command depends on a notion of *will* within the principal sentence. Lastly, you ask your pupils what *subordinating conjunctions* connect each of these kinds of dependent sentences with its governing principal sentence, and do not forget to state that the *interrogative pronouns* who, whom, whose, which, and the *interrogative adverbs* when, why, wherefore, whereby, etc., may have, beside their functions as pronouns and adverbs, the function of *subordinating conjunctions* in sentences of indirect question. Later, you may state that, if the subordinating conjunction is, for the sake of brevity and stress, omitted, a dependent sentence of *indirect speech*, question, or command is *seemingly* converted into one of *direct speech*, question, or command, and you may exemplify it.

You ought not to forget to impress your pupils with the fact that, in a principal sentence, the first person, the speaker, is the asserting, or questioning, or command-

ing person, while, in a dependent sentence of indirect speech, question, or command, a second or third person is represented by the speaker as the asserting, asking, or commanding person.

Besides the above three kinds of dependent sentences, you ought to state the following kinds: 4. Dependent Sentence of *Intention* (conjunction, in order that, so that, etc.); 5. Dependent Sentence of *Condition* (conjunction, if); 6. *Relative Sentence* (conjunction, one of the relative pronouns, who, that, which, or one of the relative adverbs, why, wherefore, whereas, etc.); 7. *Local Sentence* (a subdivision of the relative sentence—conjunction, where, whence, whither, in which place, etc.); 8. *Temporal Sentence* (also a kind of relative sentence—conjunction, when, as soon as, while, after, ere, before, till, etc.); 9. *Comparative Sentence* (also a kind of relative sentence—conjunction, as, than, the; for instance, so large *as he is*; larger *than*

he is; the larger *he is* the better); 10. *Causal Sentence* (conjunction, because, as, since, etc.); 11. *Adversative Causal Sentence* (conjunction, although, how-so-ever); 12. *Resultant Sentence* (conjunction, so great *that it was dangerous*); 13. *Substantive Sentence*, or one that stands in the stead of a noun; for instance, *that you hate them* [your hate] makes them no worse in my view (a subjective sentence); *that God is good* nobody denies [the goodness of God] (an objective sentence); 14. *The Participial* (shortened dependent) *Sentence*; 15. *The Infinitival* (shortened dependent) *Sentences*.

"Analysing," in grammar schools, is of utility only when the pupils can distinguish the above kinds of sentences, and thereby obtain an insight into the entire construction, logic, and character of a language. Then, and only then, will the principal object of analysis have been obtained.

"HOE OUT YOUR ROW!"

One lazy day a farmer's boy
Was hoeing out the corn,
And moodily had listened long
To hear the dinner horn.
The welcome blast was heard at last,
And down he dropped his hoe,
But the farmer shouted in his ear:
"Hoe out your row! Oh
"Hoe out your row!"

Although a "hard one" was the row,
To use a farmer's phrase,
And the lad, as sailors have it,
Beginning well "to haze,"
"I can!" said he, and manfully
He seized again his hoe,
And the farmer smiled to see the boy
Hoe out his row. Oh
Hoe out his row.

The lad the text remembered long,
And proved the moral well,
That perseverance to the end,
At last will surely tell.
Take courage, man! Resolve you can,
And strike a vigorous blow;
In life's great field of varied toil
Hoe out your row. Oh
Hoe out your row.

TO teachers has fallen the hardest task
"in life's great field of varied toil;"
for who has the hardihood to assert that

any task can be more difficult than that of teaching "other people's children"?

First among the difficulties and annoyances is that crying nuisance of meddlesome *Trustees*.

These trustees, they spit upon the floor, they keep their hats on in our presence, they talk bad grammar to us, while consternation sits upon the faces of our pupils who listen. These are some of their *minor* sins. Among the *major* the most insufferable is this: that they know, without any experience whatever, just how to do that which we, with years of experience, and perhaps some natural talent, have not yet learned how to do, viz., *to teach and to govern*.

See Mr. A, of the Board of Trustees in Hardscrabble, town of Notown, enter your recitation-room, where you have the third class in Arithmetic dragged at length by the hair of their heads, as it were, through *Denominate Numbers* and *Vulgar Fractions*, aghast at the black-board, confronted by a terrible sum in Simple Inter-

Mr. A. has a clear head for accounts. compute interest so closely that he how much longer coming is the on his investments during the long summer than during the short winter; and he is confident of his to teach *interest*. The children air mouths and listen eagerly while plains" and "explains," until he dained himself into a profuse pen; yet the more he explains, the he indubitable evidences of pro-*uzzlement* overspread their counte-

He lays down the chalk at length, : a while the pocket handkerchief, kes his hat, and making his bow, 'That's the way to teach interest, eek." If Mr. A had to *make his* y teaching interest, I wonder how fortune he would acquire?

A departs, rather pluming himself iving taught the teacher a thing or ut interest. He has a genuine re- the welfare of the school, and for her, and he is unconscious that his the school has much increased the s labor.

se children now think that Mr. A ands interest better than the teach- nost mischievous "thought" that is. y ought to think that the teacher ands arithmetic better than any in the world.

ey are discouraged from attempt- arn interest—for even Mr. A him- ld not make it plain to them.

se teacher, being vexed and dispir- ds his class unmanageable.

will, therefore, be a fearful list quencies at three o'clock, and a ies of wrangling complaints from nts; an old-fashioned crying-spell

Meek, when the day's trials are nd a throbbing headache for school rning.

he whole, it seems as if it would en better if Mr. A., being a trustee, *nded his business*, and permitted her to mind hers.

, another member of "the Board," e knows how to manage boys, and asumed with a desire to display his on the refractory subjects at the

The shrewd young scamps permit them- selves to be easily managed by a trustee, to the intense chagrin of the teacher, by whom they will *not* permit themselves to be easily managed. And so Mr. B is con- firmed in the views he has felt impelled to express at the meetings of "the Board," —"Miss Meek seems to be a pretty good *teacher*, but she knows nothing about government. She can not get along with Mr. This-one's boy, and Mr. That-one's boy; but whenever I go to the school, I manage them without the slightest diffi- culty." Such is Mr. B's opinion. *We* know that it is the boys who manage Mr. B.

The storm and the sunshine are each inoonvenient at times; and so are trustees. But if we would breathe a pure atmos- phere, we must have storms; and we must endure the hot sunshine of midsummer, if we would enjoy the fruits of autumn. Once a month, or at most once a quarter, we are glad to endure trustees.

Nature has in all her works a system of compensation. You know we teach the children that the carbonic acid exhaled by the respiration of animals is greedily inhaled by the plants, while we, on the other hand, inhale the oxygen exhaled by the plants. Well, Providence, which works by natural means, has ordered that wherever there is a Mr. A. or a Mr. B in a board, there shall also be a Mr. C. whose shrewd sense shall preserve the intercourse between his associates and the teachers upon a friendly footing, and whose imper- turbable good humor shall act as a fly- wheel in absorbing without damage to the machine, the too great momentum which the vagaries of Mr. A or Mr. B will some- times give it. Mr. C we shall cherish, not alone because his zeal is as great as that of Mr. A and Mr. B, but also because his zeal "is according to knowledge."

The annoyance next in importance to be noticed, is the humiliating sense of social inferiority too generally forced upon teach- ers in communities intelligent enough to have a social intercourse worthy of the name. To the numerous festivities, whether they originate in hospitality or in frivolity, the lawyer, the doctor, and the minister are sure to be invited; but

the teacher! "A very good sort of person, the teacher; but he can scarcely expect to be asked to-night." Why can he not? Is he less a professional man than the lawyer or the doctor? or are his services less important to the community than those of the minister? Not one whit. To teachers is committed the great responsibility of opening, through the mind, the directest avenue to the heart. No one can look unmoved upon that most glorious sight, the eager attentive eye of an artless child, who is drinking in your instructions with the avidity of the thirsty sand, and whose little heart, in accord with yours, lies expanded before you like the landscape covered with new-fallen snow. You may explore its limits, leaving the impress of your footsteps, not to disappear with the returning sun, but to remain, ineffaceably fixed, for time and for eternity.

To the tyros of our profession may we well surrender the daily drudgery of grammar, geography, arithmetic, and the whole catalogue. But let those of us who would control the issues of thought rise to that height where, as from a mountain upon an extended plain, we may look down and address ourselves to the grand task to which duty has called us; the task of raising the present generation of children to an appreciation of the privileges which the stupendous events of the present day are marching, with even furious strides, to prepare for them.

An interesting portion of our common country now lies invitingly open to our profession. The busy whirl of life will soon wind up the scattered threads of hatred, envy, and malice that now encumber the nation's path. Then shall dawn upon that blighted region the benign influence of education, and the world shall see how much more powerful to subdue the nations is that agent, gentle as the dew distills, than the thunders of war and the raging force of passion.

To be consistent with the genius of our profession, let our instructions descend, like the snow-flakes, gently, noiselessly, continuously; shunning violence, as the flakes yield to the eddying gust; but, nevertheless, persistently as the flakes under the influence of gravity upon the

first calm reach their destined place. What force of nature is so resistless as snow? How, with its accumulated feathery weights, does it by imperceptible degrees overwhelm the face of the earth. Like charity, it hides with its whiteness every unsightly object, and transforms the rectilinear awkwardness of fence-houses into its own witchery of snow. So should our instructions descend upon the minds and characters of our pupils, retreating before the gusts of passion, continuing, upon the first calm, to descend, descend, until every defective character is obliterated, and the natural features of mind and conduct have been preserved only to contrive the graceful perfection which culture and refinement bestow.

The annoyances of which we so often complain result almost wholly from our own fault. We fail to *hoe out our own garden*. May not the teachers mould the character of their pupils into almost any form they will? The teachers, I say. Not the schoolmasters and schoolma'ams, those worthy to bear the honorable title of "teacher." And if the common school has grown up impertinent and enormous, these defects are surely a result upon the moral culture it has derived from its teachers.

We enter the field in the morning with high anticipations, looking contentedly upon the promising crop vigorously shooting up, and determined that diligent exertion shall keep the rows straight and exclude every weed. We put on our coats; all obstacles are overcome by energy, which supplies even the want of skill. But as noon approaches, our efforts slacken, we "listen for the dinner-bell." We begin to regard the salary rather than the work. Day after day we leave the field. The weeds grow apaciously last, with implement over the shoulder and coat upon the arm, with weary we quit the field. So that when at last the crop is gathered, the regular abundance of fruit in the finished rows mortify us, and condemn our inaction when with superior skill we have failed to secure the entire crop. Half-formed characters; the un-

minds; the misdirected energies, and the misguided zeal—how they condemn us for not having “hoed out the rows!”

In every decade there arises some monstrous doctrine, which spreads among men of culture, until coming in contact with the strong common sense of the illiterate vulgar, it explodes, and its professors sink into contempt. Should not a large share of this contempt, in equity, be visited upon the teachers of these “learned fools?” The very intellectual vigor which has enabled them to make themselves notorious, proves how well the teacher has hoed a portion of his row. Why did he not “hoe out the row,” and educate also the common sense?

An excited brain and palsied body is the prevalent result of our methods of instruction, whose perfect work, like that of the

pyrotechnist, flashes up into a blaze of glory, and then expires! Let us return to our pristine models of Greece and Rome. Let the gymnasium again enter into our curriculum. Let us run, jump, swim, play ball, skate! Let us, instead of the shrunk-en shanks, lantern jaws, and solemn airs of the “schoolmaster,” present to our pupils vigorous manhood, overcoming imperfections of body, as well as of mind and morals. We should not presume to teach lads from whom we have anything to learn of athletic sports.

To make money is the fool's talent; to *make character* is our business. Let us seize and adapt to our use every common-sense suggestion that bears upon our calling, and, strong in mind and strong in body, work with a will to “hoe out the row” assigned us.

NATIONAL EDUCATION.

THE education of a man, and also of mankind in general, is progressive. It is constantly advancing, both in individuals and nations. Ages leave to ages the results of their material and intellectual labors. Man may be said to exist in a state of constant progression; for the ability to improve upon instruction is the characteristic which distinguishes and pertains to him alone of all the animal creation. Arts may be lost and sciences neglected, the genius of man may as often appear to retrograde as to advance, yet the philosopher, who studies deeply the question of education, must admit that all such losses and neglects are more than counterbalanced by progress in other directions; more necessary to the development of the world's great design, which culminates in the triumphs of humanity. The gain once achieved can no more be lost, than the flower can return into its seed, or the tree shrink back into its root.

We present these statements, because there are those who have but an imperfect idea of the full import of the word “education;” a word which comprehends both

the instruction of a child, and the development of a nation or a world. Few appreciate its entire meaning, even as regards childhood and youth. There are more lessons learned by boys and girls, outside the schoolhouse, than those appointed to be studied within. Every sense in every returning day is imbibing constant instruction. Every surrounding circumstance bears on the question of education.

The distinctions and political classifications of mankind in Europe are unjustifiably based on grounds which arise solely from their defective systems, or rather their neglect, of popular education. Familiarize man with what is beautiful and ennobling, and you will produce, as a general rule, beautiful and noble men. This, in a very inferior degree, is admitted and acted upon with regard to the lower animals; why halt in applying it, in its full bearing, to humanity?

It will be seen, from the foregoing remarks, that we are not of those who believe that the termination of the course of academical studies completes the period of education. In order to secure the con-

tinnity of the advantages of our form of government, it is absolutely necessary to advance upon this. Without at all seeking to enforce the dull routine of scholastic life, the people must be still further instructed. Botanical and zoological gardens must be established. Schools of science, art, and literature ought to be founded in all our large cities. A minister and board of education in Washington ought to be created. Paris and even London are before us in these matters.

Yet the nations, of which they centres, can better afford to rest some of their rulers, even now, the policy of refusing, a full and education to the classes devoted to labor.

As. republicans, our politic tem is based upon the equal rig duties of all our people, and the of all our citizens is a necessity of tinued existence, the very life, be safety of our nation.

BRAINS—HOW TO GET THEM.

A "BROOKLYN Teacher," in a series of vigorous articles published in one of our daily papers, has exhibited the peculiar importance of liberal education to that class who, with the most worldly wealth, have the least talent, and the greatest dislike for study. In an article with the above caption, he undertakes to show that there is no necessity in such cases for failure. We give the gist of his arguments.

The fundamental truth upon which rests the possibility of success is, that the power of mind upon mind is unlimited. It needs only to be brought really to bear; and if a human mind is idle and uncultivated, it is because the influence which a superior intelligence is capable of exerting upon it has never been freely bestowed.

The distinction between minds in children is simply a difference in degree of susceptibility to intellectual influence. One mind will catch a suggestion from a teacher or a book, expand it and expand with it, retain it and develop it, as eagerly, naturally, and pleasurably as a good appetite takes to food. A boy with such a mind wants nothing but books and school to make a scholar. It matters little where you send him. Another seems impenetrable to an idea—an intellectual stoic, upon whom the clearest explanation makes no impression, and to whom mental exertion, being fruitless, is odious. You will send such to the best schools in vain

Yet they are not incapable of slowly magnetized and excited to vitality by a superior mind. It is that the effort of the teacher must be proportioned to the degree of inertia to be overcome, and that if so proper as to vigor and persistence, it must I state no theory here which has the test of severe experiment. In all friction—closer, more personal, vigorous, and more persevering—develop vitality where schools, books, and have failed.

Let me not be misunderstood. Energy will not do the business. I speak of friction for stimulating the functions, we do not mean that of smith's rasp. We mean a friction is at once energetic, electric, and genial. The glow of vital action aroused. In like manner the intellect not only irritation, but stimulation and encouragement. All say, and say to pupils should be encouraged. I seem to think of any way to do this the often inapplicable and pernicious of praise, which, if undeserved, encourages indolence rather than effort. Shall we do where praise is implicit? I answer, What we should always prefer to much praise—that I encourage the mind by seeing the taste the joy of achieving something for self. There is no mind but can be taught to do, something by

something real and palpable toward achieving any proper task.

And here we come to one of the grandest causes of good-for-nothing pupils. They really do not see how to learn their lessons; or they never began to learn the *art* of mental application; and they have, of course, no one at leisure to spend hours in teaching them individually how to study, or in putting them through a steady and continuous mental movement until they learn to sustain it independently. They are as truly and helplessly stuck fast as our army once was in the Virginia mud. They pore over the book in vacuity and despair, and reproaches and punishments afford no remedy; or they are obstructed at every turn by some perplexity which no one is at leisure to remove effectually. The short routine answer, all the teacher of a school has time to give, does no good. They lack the invincible determination which only one boy in a hundred has, to digest the obscurities of the book-statement for themselves, and they settle down deeper from day to day in disgust and despair.

What they need, in either case, is an effort from the teacher, fully proportioned to their deficiency, whatever it is, and bestowed without stint. They want an auxiliary will to keep them to the work until their own will is stronger, and effort has become habitual and natural. They want the method of a superior and disciplined intellect to guide them over and over again, from step to step, through plain, direct processes of reasoning, and systematic modes of examining and memorizing statements. With these aids they will soon be surprised and delighted to find themselves actually achieving intellectual processes which had been to them hopeless, monstrous, hobgoblin tasks, associated only with failure, humiliation, and punishment. Like our soldiers in Virginia (ante-Grant), having been chased so often, they will be enraptured to know for once how it feels to "chase." The grand secret of interesting children in any thing is to remove the stumbling-blocks, and then make them do their work, and do it well. Every one loves to do, whatever he can do, well, and no such thing is too small or uninteresting in itself to take a pleasure and a pride in.

No matter how they hate it, I never failed to get the worst pupil interested at last, if I had long enough control and a tolerably liberal allowance of time to carry out the process.

It is clear to the reader that the machinery of "school" contains no provision adequate to our purpose. Separate personal drill, by the hour, and every day, from a teacher who allows himself no such word as "fail," is absolutely necessary for a large proportion of children, in the early stages of education, to prepare them for any benefit from their classes in school. The same invigorating drill, stimulating influence, and expert direction in study, are of proportional value (although not exactly a *sine qua non*) to the more talented young students. In short, it ought to be the first maxim of every parent who means to afford his children the best advantages for education, that the more liberally he can engross the services of the most competent teachers—cost what it may—the cheaper is the instruction purchased in the end.

The proverb, "No royal road to learning," is true in a sense not usually realized. In other words, there is no such thing as cheap education. It is always costly to "somebody." All that the pupil can not or will not earn alone must be earned with and through him by the teacher, and paid for by the parent—or done without, which is the more usual course.

In the second place, it will have occurred to the reader that the real difficulty is to get the special kind of instruction recommended. "First catch your hare." First find your tutor—the judicious and untiring disciplinarian, who knows how to guide, to prompt, to suggest, to stimulate, but not to supplant the exertions of his pupil, and lighten his own task, by indulgent assistance. It does indeed require, in addition to scholarship, a patience, a persistency, a versatile ingenuity, and above all a genuine enthusiasm for teaching rarely combined in one character. This difficulty I do not pretend to solve. I can only say that if I were in the place of the rich parents I would compass sea and land, regardless of expense, to engage, and as far as possible engross, the services of

such a preceptor. Not undervaluing the peculiar uses of school, I should combine the separate with the social modes of instruction, making the school and the private tutor reciprocal helps and stimulants. If a man of wealth has an important affair to be managed, in law, in medicine, or in architecture, he wants nothing short of the best services of the most efficient and competent experts, and thinks nothing dear in such a matter but cheapness and stint. But when the children, for whom chiefly he lives and labors, gains and saves, are to have their intellectual power and calibre and respectability, and even the intellectual rank of their posterity, meted out to them by schools and schoolmasters, it is wonderful how easily he can be satisfied, and how superfluous and unreasonable the expense of special professional services appears!

To sum up: First—Find a true teacher, not one without faults, but one whose faults are not those of laziness, rote, helplessness, or ungodliness; not too small nor

too great a man for your purpose. Second—Engage all the time he can spare, engage it "for the war," pay for it well, and let him study and manage the mind of each child, as a lawyer studies and manages cases involving millions of dollars, or you study and manage a great business enterprise, which is yet as nothing compared with the least of parental enterprises. Third—Put the time of your children at his disposal; make the preceptor and physician the final arbiters of their holidays and hours of recreation, and let them never hear of the possibility of leaving school—chafe as they may—until their education is, in all respects, thoroughly grounded. Fourth—If possible, connect all this with the recitations and emulations of a school where the best competitors in learning are collected, and exert yourself to get every promising student you can hear of into the same school, for the mutual influence of youth is to them the most potent in the world, whether for good or for evil.

THE UNFINISHED PROBLEMS OF THE UNIVERSE.*

III.

IS it possible to find a center about which the whole Stellar Universe may be revolving? Admitting that there is no central orb there, admitting that there is no grand, central, controlling body, can we find a common centre of gravity of the whole immense system? The time will come when this question will be answered in the affirmative. A long time may roll away before we shall gather all the data necessary to give the exact solution of this great problem. A solution has been commenced; it has been attempted by one of the most distinguished astronomers of Europe, the successor of Struve, at the great Observatory at Dorpat—Maedler—who has distinguished himself in the astronomy of

the double stars, and who, by his computations, examinations, and investigations, has placed himself on a level with the most distinguished men of the age.

I speak thus highly of Maedler because his theory is not now adopted by the best minds of the world. They are scarcely willing to accept it as yet. This was true of the theory of Sir William Herschel, when he announced that there was a point toward which the solar system was sweeping in space, and he believed that he had found it. Years, scores of years rolled away before this was received, but it was a pioneer announcement—the announcement of a brave, bold, and daring mind, one that dared to speak, no matter whether the world listened or not; and now we see the result. Then this German astronomer, in the service of the Emperor of Russia, dared to put forth this grand con-

* By the late Prof. O. M. Mitchell, in "Pulpit and Rostrum," No. 3. Published by Schermerhorn, Bancroft & Co.

f his; whether it be sustained or question which posterity has to re-

give some of the train of reason-
 ted in attempting to fasten the
 at which the whole Stellar Uni-
 evolving, our own sun among the

First, then, the Herschels have
 to us the figure of the great stel-
 n to which we belong. We know
 tars are condensed in a certain
 ich we call the Galactic Circle.
 more numerous there; they are
 urther there, and heavier, in some
 en you come to take the mass
 given area, than you find in any
 ion. Now suppose this to be that
 as we rise above it, toward the
 e stars grow fewer in number in
 ace; they are more widely separ-
 each other, and the stratum is
 ively shallow in that direction, as
 below, toward the South. We
 enabled to determine the position
 vn sun in this stratum, and we
 nparatively central in its location,
 we are nearer to the South than
 . Now, if this be true, we may

that the centre of gravity will
 l the North. I have already an-
 hat we have determined the di-
 solar motion precisely. If we
 ircle perpendicular to this plane
 e whole heavens, somewhere in
 e of this circle, we may hope to
 entre about which our own sun is
 , and if we find this centre, it is
 ion centre of gravity of the en-
 ie of stars.

as the nature of the research
 t guided Maedler in his examina-
 e began by looking at various
 s in the heavens. His approxi-
 rvations led him to the region of
 ulation "Taurus." He first com-
 y supposing that by possibility
 nt star in the eye of the Bull—
 an"—might be the central sun,
 ous examination soon demon-
 at this could not be so. He then
 ittle further toward the South,
 he beheld that mighty and beau-
 er of stars which we call the
 Seven of them are visible to the

naked eye; but when we turn the telescope
 upon this cluster, we find hundreds coming
 up to greet the vision of man, presenting
 one of the most beautiful and magnificent
 spectacles that is to be found in the whole
 heavens. Here is, then, a vast multitude
 of clustering worlds, and in the centre of
 this cluster a bright and brilliant star,
 named by astronomers Alcyone. Maedler
 thought this might possibly be the centre.
 To verify the truth of this hypothesis, he
 began by a critical examination of what is
 called the *proper motion* of all the stars
 composing this cluster—all of them that
 had been mapped down; fortunately, this
 particular cluster had engaged the atten-
 tion of Bessel, with his great heliometer.
 Many years before, he had determined the
 places of some fifty or sixty with wonder-
 ful delicacy and precision, and by compar-
 ing Bessel's observations with those of
 other astronomers that preceded him, and
 of others that followed him, it became pos-
 sible to ascertain the amount of proper
 motion belonging to each and every one of
 these stars. Now, when the proper motion
 is examined, it is found to be almost identi-
 cal for every one of them. Here is a most
 remarkable fact. Suppose these stars not
 to be associat-d in any specific manner;
 suppose them to be grouped together by
 chance, if you please. Why should they,
 in consequence of the movement of our
 own sun through space, all of them appear
 to sweep away together? This is utterly
 and absolutely impossible in one sense, un-
 less you suppose them all to be crowded
 and condensed together, so as to become,
 as it were, a solitary nobody.

It is just as if you were sweeping along
 the line of a railway, and should see far
 off in the distance a little cluster of trees.
 By comparing their places with some more
 remote object, they might all appear to
 move together toward you. But suppose
 this cluster of trees should be expanded,
 separated, severed, and swept out to
 greater distances; then, you perceive the
 motions would be all different. Fixing
 your eye upon a distant object, one of
 these trees would move with a certain
 velocity, and another with a different
 velocity, and another with a still different
 velocity. And so in sweeping out the tele-

scopic ray to this mighty cluster of stars in the Pleiades, they ought to appear to change; they ought to seem to sever, the one from the other, if it be only occasioned by the fact that they are located in a sort of line in this way, some near to us, some in the center, and some more remote. They do not thus exhibit themselves to the eye of man. Their proper motions are all the same.

Now, if Maedler adopted the idea or hypothesis that here was the center of gravity of the universe, he could then commence a train of reasoning to verify the hypothesis. If this is the center, then our own sun is sweeping around that center, and the stars on the hither side will appear to move in a certain direction; the stars beyond will appear to move in a certain other direction; the stars on the outside of the sun's mighty orbit in opposition to it will appear to move in a certain direction; and the stars that, so far as our own sun is concerned, happen to occupy that circle perpendicular to the line of the motion of the sun, will have a certain direction of motion.

Now, it had been shown, in a paper of extraordinary interest and very profound investigation, that a large number of the conditions required to make this hypothesis the true one are verified by the examinations of the telescope. I do not pretend to indorse the theory of Maedler with reference to his central sun. If I did indorse it, it would amount to nothing, for he needs no indorsement of mine. But it is one of the great "unfinished problems

of the universe" which remains y solved. Future generations are to up. Materials for its solution are to mulate from generation to generation possibly from century to century. know not but thousands of years away before the slow movements of orbs shall so accumulate as to give data whereby the resolution may be fully accomplished. But shall we work because the end is far off? An old astronomer, who once stood in a watch-tower in Babylon, and there saw the coming of the dreaded eclipse, said: "I care not for this; this is the business of posterity; let posterity take care of it. I will make no record;" and had, succeeding ages, the sentinel in the tower of the skies said: "I will not shrink from my post; I have no concern in these matters, which can do me no harm. It is nothing that I can do for the future which I live"—where would we have been now? Shall we not do for those who are to follow us what has been done for us by our predecessors? Let us shrink from the responsibility which is laid down upon the age in which we live. The great and mighty problem of the universe has been given to the whole family for its solution. Not by any one age, not by any nation, not by any individual man or mind, but by the great or grand, has this wondrous problem been accomplished, but it is the duty of humanity; and it will last as long as humanity shall inhabit the globe on which we live and move.

OBJECT-LESSON ON GOLD.

PROPERTIES OF GOLD.

TEACHER. What have I here?
Class. A gold ring.

T. It is not the ring, but the substance of which it is made, that I want to speak of. What is it? What shall I write upon the blackboard?

C. Gold.

T. To which of the three natural domains does gold belong?

C. To the mineral kingdom.

T. Tell me what properties or qualities you know gold possesses.

C. It is hard, yellow, smooth, heavy, dry.

T. Can I bend it easily?

it is stiff.

et it fall, will it break?

it is hard.

is hard, but it will break very
must think again.

ough.

is right; but instead of using
tough, we say it is *tenacious*,
as exactly the same. Can you
gold?

it is solid.

and wrong at once: you are
ying "no," and right also in
it is solid, for that is one of its

but not right in saying we
through it because it is solid:
olid; but surely we can see

Try again.

hick, dull—

er word will do, for we may
oth in describing a transparent

When we can not see through a
re call it *opaque*; when we can
h it, we call it *transparent*. Is
opaque or transparent?

opaque.

should put a piece of gold into
at would be the consequence?
uld melt.

word which describes that prop-
ble. Gold does not lose, either
r value, by being melted; there-
dled a *perfect* metal. The only
ct metals are silver and platina.
this ring and look on the inside,
what you notice.

stamped.

old will receive a stamp what
ust it possess? You can't tell?
word for stamp is impression;

impressible.

t. Gold can be beaten out into
sheets so thin that they will
r breathing upon; what word
use to express this quality?
cious.

if gold were not tenacious it
be beaten out, certainly; but
th is tenacious, and you will all
it would be useless to try to
at to increase its size: the word
malleable. Gold is also *ductile*,
of being *drawn out* into wire

finer than a human hair. The gold thread
used by the Israelites and Egyptians in
their fine embroidery, was the solid metal
beaten out very fine, and then rounded;
we now use a silken thread with a gold
coating as a substitute. We will close the
lesson for to-day at this point; to-morrow
we will speak of the uses of gold; and
how, and where it is found. You may
read, from the blackboard, the properties
of gold.

C. Gold is hard, yellow, smooth, shin-
ing, heavy, dry, stiff, *tenacious*, solid,
opaque, fusible, perfect, *impressible*, malle-
able, and ductile.

USES OF GOLD.

T. The subject of our lesson to-day will
be—what?

C. The uses of gold, and where it is
found.

T. Name the properties of gold, and I
will write them on the board. Now for
its uses—what are they?

C. It is used for money—

T. Instead of the word money say
coins.

C. For coins, watches, embroidery,
rings, brooches—

T. Can you not use one word to express
all such things as rings, brooches, pins,
buttons, studs, and the like?

C. Is it jewelry?

T. You are right. Are there any other
uses to which gold is applied?

C. It is used for picture frames—

T. I think not; or, if so, the instances
will be very rare, and quite beyond per-
sons possessing an ordinary degree of
wealth.

C. I have it now, teacher; it is not for
the frames, but to cover the frames, that
gold is used.

T. You are right this time; can you tell
what this overlaying other substances
with gold is called? No? What would
you say of the edges of this book?

C. They are gilt; and overlaying with
gold is gilding.

T. Now you are using your thoughts
well, and I am pleased. Besides what
we have named, gold is used for goblets,
vases, spoons, and such things. Now read
from the blackboard the uses of gold.

C. Gold is used for coins, watches, embroidery, jewelry, gilding, and for various utensils, such as goblets and vases.

T. Where is gold found?

C. In California and Oregon.

T. Yes; it is found in most hot countries—California, New Mexico, Brazil, and the East Indies. Africa has always been famous for gold. Herodotus, the Greek historian, tells us that the King of Ethiopia brought to Cambyzes all his prisoners bound with chains of gold. Gold is sometimes found in the sand and mud of rivers, particularly in Guinea in Africa, and from the rivers Senegal, Gambia, and Niger.

It is said that the chief source of the long-famous riches of King Croesus was the golden sands of Pactolus, a river in Lydia, flowing into the archipelago.

The discovery of gold in Brazil was made by a party of soldiers who were sent there to quell an insurrection. They found the natives using gold for making fish-hooks and other common things; their curiosity was excited, and they asked questions about it, and were told that it came down from the mountains in the time of the periodical floods. This was enough to cause a diligent search to be made, and the quantity of grains found after the floods was so great as to appear almost fabulous.

The principal gold mines in Europe are those of Hungary and Saltsburg; Spain is also thought to be very rich in gold; but since the discovery of this country the mines have not been worked.

We will now review the whole lesson. What have we called gold?

C. A metal.

T. To which kingdom does it belong?

C. To the mineral kingdom.

T. What are the properties of gold?

C. It is hard, yellow, smooth, shining, heavy, dry, stiff, tenacious, solid, opaque, fusible, perfect, impressible, malleable, and ductile.

T. What is the meaning of tenacious?

C. Tough.

T. Why do you say gold is

C. Because we can not see

T. What do you mean by it?

C. Capable of being melted

T. What do you mean by it a perfect metal?

C. That it does not lose weight or value by being melted

T. What do you mean by it?

C. Capable of being beaten into sheets or leaves.

T. How thin can gold be?

C. So thin that the leaves bear breathing upon.

T. Upon what other property does its malleability and ductility depend?

C. Upon its tenacity.

T. Name some of the uses to which it is applied.

C. Gold is used for coins, jewelry, embroidery, gilding, goblets, spoons, etc.

T. From whence do we obtain it?

C. From California; Brazil; East Indies; Guinea, and other parts of Africa, and from rivers in Europe.

T. What king bound his prisoners with chains of gold?

C. The King of Ethiopia.

T. From whence is Croesus supposed to have obtained his proverbial riches?

C. From Pactolus, a river in Lydia, to have golden sands.

T. How, and by whom, was the discovery of gold in Brazil made?

C. By some soldiers who were sent there to quell an insurrection. They found gold used for such purposes among the natives, and mentioned them as to where they found that there was a great quantity in the country.

T. Well; you have remembered very well indeed. In two weeks I shall ask for a composition from each one of you. I hope that you retain the knowledge now obtained.

PRINCE NAPOLEON is now writing a history of the Buonaparte family, to which

his speech at Ajaccio may be added as a preface. The first volume

THE TIDES.

THAT "time and tide wait for no man," is true,—is more than true. The trite observation is a tautological truism. For, in many languages, *time* and *tide* are, radically, synonymous words.* On the sun and the moon time and tide alike depend. But the lunar orb is of little importance in our chronological calculations, and the solar sphere only slightly influences the tidal wave. It is the Man in the Moon, therefore, who fixes the high-water and low-water marks.

The natural tide varies from about two feet at the equator, to about sixty feet near the poles; but various causes, among the most important being the configuration of the land, modify the normal results of the ebb and flow. In some places the tide rises to the height of one hundred feet, as in certain bays and channels opening in the direction of the tide-wave, and causing the convergence of the water to a narrow head. The various ranges, also, afford anomalies. On the coast of Ireland are places at which the range does not exceed three feet, while on either side, at short distances, it is more than twelve feet. At Chepstow, in the British Channel, directly opposite the locality where these low tides occur, the difference between high water and low water is not less than sixty feet. The height of the tide depends to an appreciable degree on the condition of the atmosphere. A low barometer denotes a comparatively high tide; a high barometer, a low tide. Winds exert a strongly disturbing influence. During a hurricane in England, January, 1839, there was no tide at Gainsborough, on the Trent, a phenomenon never before observed; while at Saltmarsh, on the Ouse, the tide continued to ebb, till in many places the bed of the river was dry.

The velocity of the tide-wave may be inferred, on considering that, being determined by the moon's transit, if interrupted, it would necessarily make the cir-

cuit of the earth in about twenty-four hours. At the equator, the velocity would be about one thousand miles an hour. In some parts of the Atlantic it is not much less than seven hundred miles an hour, or nearly equal to the velocity of sound through the air.

That tides are caused by solar and lunar attraction was first taught in Newton's *Principia*. The manner in which the attractive force produces the phenomena in question was not comprehended. Newton's views were erroneous, but fifty years elapsed before they were so far modified as to receive any important correction. Since 1738, at which time the French Academy of Sciences proposed the subject of the tides as a prize question, it has engaged the attention of some of the most philosophic minds in Europe and in America. Yet on the moon's horns still hang many a dilemma, and even the most elaborate theories, based on the Newtonian views, are not entirely satisfactory to those who propound them.

The most plausible and beautiful improvements of the old explication, in one direction widely diverging from the former track of inquiry, have been made by Datus Kelly, whose originality of thought entitles his name to a more conspicuous place in philosophic annals than has been assigned it. To the common teachings of the schools, that the moon more strongly attracts the water than the solid portion of the earth, causing the surface of the ocean to rise above its ordinary level, and, as the moon moves from east to west, producing a current, or rather a swell in the ocean, running in the same direction, he objects, that, on this principle, the tide-wave in all latitudes should move from east to west, and be the highest in the greatest extent of deep, open water. Facts favor his objection. In the Southern hemisphere, where the water encircles the globe, the tides are not as high as in many other places. The Mediterranean Sea, stretching east and west more than two thousand miles, is destitute of tide at either limit, while at the bottom of the Venetian Gulf, the distance

* Anglo-Saxon, *tīd* (*tīkadh*), time. Low German, *tīd*, time; *tīde*, tide. Dutch, *tijd*, time; *tye*, *tij*, tide; etc.

not one-third as great, there is a regular tide of three feet, in an opposite direction. A tide which sometimes exceeds twenty feet, is found in the Gulf of California and the Gulf of Panama, which can not be accounted for by former theories.

The solid parts of the earth are supposed to be, per cubic foot, about five and one-half times as heavy as water. Accepting the usual figures as to the diameter of the earth, and the distance of the moon, that portion of the earth nearest the moon must be attracted one thirtieth part more than the opposite portion. The matter composing the earth being elastic, it assumes a spheroidal form, the longitudinal direction being always in a direct line with the moon; as in the satellites of Jupiter, which are of ovate form, and have their greatest diameter in the direction of their primary.

Hence, the earth is a prolate as well as an oblate spheroid. Exposing every part of its equatorial circumference to the attraction of the moon once in every twenty-four hours, Mr. Kelly holds that it must change its elongated form at the rate of one thousand miles an hour, at the equator. The water, being less dense than the solid portion, is less influenced by the moon, so that its tendency is, he says, to recede *in every direction*. Consequently, this oval shape of the earth following the moon in its course, causes the strongly attracted *solid portion to slide*, or be drawn from under the water, in obedience to the superior attraction.

This is the most satisfactory theory which has been presented. It fully accounts for the Atlantic northerly and southerly tides,

which flow from the equator toward the poles. It shows the cause of the tide in the Red Sea, the north and south tide in the Mediterranean, the height of the tides in the Gulf of California and the Gulf of Panama, and similar phenomena, which, by the half-accepted Newtonian theory and its received modifications, are altogether inexplicable.

The operations of nature, even in its least significant processes, will always be entitled to scientific investigation. The tidal phenomena have received no undeserved attention.

But it is a moral anomaly, that, in this practical age, the utilizing of the tide-power receives so little consideration. Tide-mills are not unknown; but they are so rarely seen, that they are, by most persons, regarded as objects of curiosity. Many a city does more mechanical labor, by steam-engines, than is accomplished by all the tide-mills on the continent. This mode of making the immense force available is only one of the innumerable applications of which it is susceptible. Taking into consideration the vast seaboard of North America, and the fact that in various parts sands extend to a great distance, sometimes as far as a hundred miles, covered by waters of less than a hundred fathoms depth, we need only to apply the accredited figures respecting the force of the tidal current, to be assured that the mighty agent which now impedes our yachts and ferry-boats, or serves occasionally to release the ships which it had fixed on a shoal, possesses, for every mile of the entire coast, an average power equal to a million ten-horse power engines!

CURIOUS ETHNOLOGICAL FACT.

IT is said that among all the varieties of figures which have been dug up from the Chiriqui graves, in New Granada, there is not one which resembles either a horse, cow, pig, dog, cat, or any other domestic animal, which is strong proof that

they were made by a race who existed prior to the introduction of these animals into this continent. Some assert, however, that fossil remains prove the horse to have been indigenous here, and not of Eastern origin, as many suppose.

AMERICAN EDUCATIONAL MONTHLY.

AUGUST, 1866.

THE SUMMER VACATION.

THE queens reign—Flora I., the flower girl; Flora II., the flimsy.

The summer-queen is fairly established in her reign. The verbenas and geraniums, at our dining-room windows, have survived the aphids and all the ills that botanical adolescence is heir to; the *mignonette*, in the parlor vases, is not less luxuriant than fragrant; a five-minutes glance at the Elysian Fields of Hoboken, and a half-hour's gaze from the bluff at Fort Lee, show the maturing grass of the meadows, and the herbage of hillside fields, hinting of the harvest, and prophetic of prosperity.

The fashion-queen, too, always firmly established, is ruling with unrestricted sway. Notwithstanding the interesting character of our national affairs, and the crisis again approaching in Europe, the present season will bring to the various places of summer resort as numerous an assemblage as ever collected at these points of attraction. The respective merits of Saratoga and Lake Superior, of Kelly's Island and the Catskill Mountains, of Newport seaweed and Cape May diamonds, are canvassed, discussed, and reconsidered with the enthusiasm of school excursionists, and the acumen of a cabinet meeting.

Choose ye, this day, whom ye will serve—Flora, the Flower Girl; or, Flora, the Flimsy. On one side, are fields and footpaths, quiet lanes and shady groves; on the other, piazzas and balustrades, billiard-rooms and hotel parlors. Here, you will see wealthy men and good-natured women, will dine with a good appetite,

without injury to the digestive functions, and sleep in a spacious bedroom worthy of Momus. There, you will be with health-seeking merchants and crook-backed belles, and, surrounded by pickpockets and sharpers, will feed on condiments, and rest in sleeping cells. Choose whom ye will serve, or try to solve the problem, for which Holy Writ gives no solution, how to serve two masters, and, adopting an eclectic system of recreation, be fashionable and comfortable—if you can.

Few persons need recreation more than our teachers. True, in pedagogy, six hours make a day's work, theoretically, and five days a week. Unfortunately, it is found in practice, that anxious thought is not usually dismissed simultaneously with the scholars; the wear and tear of mental machinery continues, when the six hours have passed, and the five days' week is completed. Teachers need a summer vacation more than bad boys need a whipping. Custom sanctions it. The law provides for it; it might be said, pays for it. For in most of our public schools there is no suspension of the salary, no debit item in consequence of the two-months' rest. Let teachers avail themselves of the privilege, and begin their perambulations with a good heart. Others, in a hundred occupations, may literally "count the cost;" the teacher should feel that, in one sense, his railway fare, his hotel bill, and incidental expenses, are defrayed by the public.

A strictly fashionable pilgrimage is our detestation. But this need not be undertaken. The extent of American territory, the gradations and diversities of social life, and the plenitude of cousins, who are glad to greet us once a year—God bless them, and preserve them in the annoyances we cause them—afford to all, who are not over-fastidious, ample advantages and attractions.

We avow our allegiance to the true sum-

mer queen. We acknowledge a preference of natural objects, of rustic scenes; we believe that their influences upon teachers are especially beneficial, morally and physically. The general phenomena of nature, atmospheric influences, climatic changes, geological and mineralogical characteristics, the peculiarities and interdependence of natural objects—these are the basis on which social laws and the rules of art must be founded. To the teacher, therefore, even in his professional character, these are of paramount importance. Even the mysteries of vegetation, it has been truly said, has a higher significance than either the education of man's intellect, or the maintenance of animal life. With the influences of the vegetable world, man's heart—his moral nature—is in intimate communion, and through them nature is revealed in her most endearing attributes; by its teachings our moral nature is affected in no slight degree, and flowers are often interwoven with the web of human destiny.

Although much may thus be learned, which will qualify the teacher for his profession, let him not make his relaxation a labor. Many teachers work too hard—study too much. All mind and no body, would in some cases seem to be the pedagogic motto. But even after considering the allegations of the table-tippers, and studying the revelations of the most distinguished disembodied spirits, we are not able to perceive that the soul is of much account in this world without its corporeal compeer. The body is slandered by the theologians, and slighted by all metaphysicians. The teacher should not ignore its importance, nor disregard its claims.

Welcome, then, the summer vacation, in which both the mind and the body may have recreation, relaxation, and, more especially, repose, *rest*. The bow must not be always bent. The wheels of

thought must not always revolve. Of oxygen burns up the blood. Excitement paralyzes the brain; enjoins periodical rest, and in ways reminds us of its need. Active, exhilarating influences are reversed by the more delicate and calmer enjoyments. The matured powers of summer are succeeded by winter's torpor. Sunlight stimulates the operation; but the energies thus excited can be sustained only by the repose which ensues, when the activity of place to the stillness of night. Countless exhalations from ocean and stream, which had arisen in the morning incense, are succeeded by the less gathering of dewdrops on flowers and quiet leaves.

OBSTREPEROUS TEACHERS

THE derelictions of some New York teachers have recently become so flagrant as to attract public attention.

1. A communication from an officer, to the Board of Education, that a teacher in Grammar School No. 29 has been in the habit of being absent from before his class in a state of intoxication, and that at one time the class was kept three weeks deprived of his instruction, and that, when urged to resign, he utterly refused to vacate his position.

2. An instructress in the Common School has pleaded guilty, under oath, of a bill of indictment for assault and battery, committed upon the person of another woman.

3. Charges have been preferred against a school trustee of the Nineteenth Ward, of an affidavit showing that he had been convicted of being accessory to defraud the wife and child of a deceased soldier, by retaining the salary and back pay which he had been authorized to collect.

4. An instructress in Primary School No. 10 has been charged with cruelly beating a little boy, and though a committee exonerated her, the resulting resolution, adopted by the Board of Education, and the remarks made pending its discussion, are very strongly condemnatory.

It has been reasonably urged that we are not to denounce a class, because individual members of that class prove unworthy of their position, and that the teachers of New York are not accountable, as a body, for the crimes of particular members of their profession. Yet it is a notable fact that a large number of the teachers employed in the public schools of the city are totally unfit for their places, either morally or intellectually. Because a person successfully passes examination, and receives a certificate of qualification to teach, it does not follow that he is therefore competent to lead the mind of youth. More discrimination is needed in the selection of teachers. Political and personal influence is allowed to weigh too heavily in the balance, and is apt to be taken into consideration in preference to moral and intellectual fitness. The standard of qualifications for teachers should be so high as to debar all applicants who are not in every respect competent. Any other public position may, with less fatal consequences, be filled by unworthy officials. Let city councils wrangle about the cleaning of the streets. Let Fourth-of-July committees change the corporation greenbacks into pyrotechnic blue-lights and rockets. But let us have integrity among teachers, and order in the schools.

Parents, it is truly said, do not appreciate the important trust which they delegate to the teacher, and are apt to overlook the fact that, in the schoolroom, more than in the family-circle, the child is moulded into the future man. There is a

disposition to leave this important matter entirely with the teachers, and to depend on them for the full charge of education. If parents would make it a point to pay occasional visits to the schools, see for themselves what progress their children are making, and judge for themselves of the capabilities of teachers, much good might be accomplished. This course would not only satisfy parents regarding the condition of the schools, but would exercise a wholesome influence upon the teachers, cause them to be more mindful of their duties, and stimulate the children with an increased ardor in the prosecution of their studies. The influence thus brought to bear would tend to remove incompetent teachers, for no evil can long withstand the assaults of public opinion when rightly directed. It is certainly the duty of every parent to assure himself that his child is properly instructed. This knowledge can be acquired only by personal observation.

AN ENGLISH SCHOOL-PROJECT.

IN England, various educational enterprises have recently been undertaken. One of these possesses some new features. The projector is endeavoring to establish a parochial system of teaching, designed to continue from the leaving of the day-school till the age of twenty-one is reached. He contends that, by a system of prizes, this object could be attained. His scheme has been commended by clergymen and influential educationists. All parishes are to furnish their own funds, which he proposes to raise by a weekly contribution of one penny from the different parishioners. It is believed that such a fund in every parish would admit of the liquidation of all expenses, including the payment of salaries to teachers, and prizes to the pupils. It is proposed to establish, in

the evening schools, singing-classes, sewing-classes, sick and burial classes, and a system of transference by which when a

boy leaves one parish school, he will be transferred to another of a higher class.

EDITORIAL CORRESPONDENCE.

MY FIRST EXPERIENCE IN TEACHING.

LONG ISLAND, N. Y., July 20, 1865.

IT seems to be fashionable now-a-days to make a father-confessor of the MONTHLY. Accordingly I make my confession. Full of philosophic ideas, and philanthropic intentions, respecting refractory boys and illiterate girls, I arrived at the age of eighteen, when, hearing of a vacancy in a country district school, some ten miles from my home, I made application, and in due time received a letter, looking as if it had been written by Noah while sojourning in the ark; this thought, however, was immediately put to flight, by seeing the signature of "Josiah Jones, of Jonestown." It stated that all the arrangements were made for me to take the school the next week. Monday morning came, and with it a long, lean, lank, yellow-haired youth, with an old one-seated wagon, and an equally old gray horse. In this style I was conveyed to my new home: the wagon was, unfortunately, so small, that it would not admit of my trunk, so I was obliged to leave it behind, to come up in the "next train," which, in this instance, happened to be a load of potatoes.

I was not subjected to the horrors of "boarding around" (though a change *might* have been for the better), but was stationed at the house of Mr. Jeremiah Jones, in the centre of the town, it being only three-quarters of a mile from the schoolhouse, and much nearer to it than any other dwelling. I can readily understand why the place should be called *Jones*—for every one there bore that name: but why it should receive the title of *town* is really beyond my comprehension. In my three months' stay there I saw only three houses and the schoolhouse, but was informed by "good authority" that there was a blacksmith-shop some two and a half miles distant. The nearest post-office was five miles; we generally managed to get the news, after it had been known everywhere else some two or three weeks.

I had fancied the country schoolhouse a neat and comfortable wooden structure, painted red, of course, with a fire blazing cheerily in the huge stove, nicely painted desks and seats occupying the room, and on the neatly whitewashed wall a few good

maps and charts. In imagination, it was surrounded by beautiful shade-trees, warding off the hot summer sun, as well as the cold winds and blasts of winter,—altogether, a delightful place in which to rusticate, and to train Young America in the way he should go.

Lo! the contrast of the real and the ideal. It was a bitter cold morning, the 15th of November, when I began my duties in this illustrious place. I think my feelings, when I saw how rudely my air-castles were tumbling down, came under that class which can "better be imagined than described." It looked more like a dilapidated barn than like my imaginary schoolhouse; the bare walls and ceiling were of boards, plaster was discarded, and both inside and outside paint and lime were ignored. The desks were of every imaginable size and shape, being literally covered with initials, names, and dates, cut in huge letters, by the schoolboy's ever-ready weapon, the jack-knife.

The small stove was a mere apology, scarcely deserving of the name; there was a broad crack in the side, through which issued little heat and much smoke.

An article in a recent number of the MONTHLY spoke of the improper manner in which schoolrooms are ventilated. In this case, the ventilation was the superlative of impropriety. There was too much ventilation. There were no less than eleven panes of glass wanting in the windows; the building had no underpinning, therefore huge cracks and knot-holes in the floor revealed the light. It was the delight of the children to lay paper over these, for the purpose of seeing to how great a height it would blow. Here and there a weather-board had blown off, so when it rained we were favored with a shower-bath, and when it snowed, like poor Mr. Williams at Mr. Flint's, we were actually "snowed under."

From this disheartening survey I turned to view the scholars. They were four in number. One boy was barefoot, and the other hatless; his hat, as he said, was put in a window at home "to keep the warm in." He insisted upon it that he was studying geography, although he was no further than N in the alphabet. The girls, also, were quite advanced; one was ciphering in short division, but had not the faintest idea what

or addition meant. The other the alphabet, and I very much ie ever will. As days passed reased. There were some large en or seventeen years of age, know what the multiplication supposed it a peculiar kind of inferior to their pine tables. scover that there was much g in that quarter, and, despair- nding a president or Congress- uestown, I was not sorry when sed. The "ventilation" had vere cold, which needed atten- ngly, on a cold morning, in the bruary, I was taken to my by the gray horse and the llow locks.

orshake the business after this hl no; I am still a teacher, happy to say, not in Jones- ie Jonestown school, it would ves as a model in various parts r. The facts which I observe believe almost any account I am glad to perceive that the MONTHLY'S *Ventilator*, and of the "Old Schoolmaster," in pters, are directly or indirectly e views with which I began neconscious of the vastness of e me. M. L. G.

NEW YORK PUBLIC SCHOOLS.

NEW YORK, July 2, 1865.

It is made whereby vocal music taught in our public schools, them secure professors who al visits at stated periods for purpose of teaching the child- Having visited many schools e of ascertaining the mode of must declare, unequivocally, s are altogether unsatisfactory. achers have been employed in for many years, and are some utedly persons of good char- onal worth. We do not think llingly injure voices, or retard of their pupils; but, to speak seem to have lost all interest their work, and have become a who rush from school to y on the piano a few common- s, which the children are ex- npany with the utmost power s, without any regard to ex- eetness of tone. The music, s in many cases of their own or, generally, compilations, h they realize a percentage, of a very inferior order of e professors say that children

are not capable of learning music of a high order. The fact is, as the musical taste of our youth is in a great measure *formed* by the music they are taught in the schools, none but the purest models should be presented. One hour a week properly employed would produce better results than are now obtained. The *boys* are not taught to *sing*. They are merely goaded on to yell at the utmost power of their voices, and to the peril of their vocal organs. It is almost impos- sible to find, among our public school pupils, boys whose voices have not been strained, and who are not losing their sweet- ness of tone by the careless manner in which they have been allowed to sing. If the whole school *must* attend the musical exer- cises, let the whole school learn notes; but boys whose voices are changed, or are chang- ing, should not be compelled to join in the vocal exercises. Boys whose voices are changing, or have just changed, should *never* sing till their voices settle. If a boy sing soprano, he should not force his chest tones up the scale, as is too often done. Boys' throats are *not* human trumpets; a boy's voice is one of the sweetest of musical tones when properly developed.

I dwell particularly on the singing of our public schoolboys, as there is much that needs a thorough and radical reform in that direction. If a stranger visits one of our schools, to hear the singing, he is generally informed that the *best* singing is to be heard in the female departments. "The boys are all very well to 'fill up,' in the choruses, or to come in on the whistling echoes; but as for teaching them good music, or showing them how to sing it, it is not considered im- portant, as the girls 'take to' singing so naturally, and then their voices are so much softer than the boys, that of course it is less trouble to teach them; and then boys are so noisy, that, positively, it is a terrible task to teach singing in the boys' department at all. But as one depends upon it for a living, why one must put up with such inconveniences 'you know.'" I firmly believe, that, were a proper system of teaching boys vocal music once adopted in our schools, and were the same interest, and, I might say, *intelligence*, manifested in this subject as is displayed in the other branches of instruction, the sing- ing in our male departments would equal, if not excel, in sweetness that of the female de- partments. We hope that our schools will investigate this subject thoroughly, and en- deavor to effect a radical reform. F. G.

A CHILD's faith in his teacher is well illus- trated by the following incident: "A little boy, disputing with his sister on some sub- ject, exclaimed, 'It is true, for teacher says so; and if she says so, it is so, if it an't so.'"

EDUCATIONAL INTELLIGENCE.

NEW YORK.—The State Teachers' Association held their Twentieth Annual Meeting, July 25, 26, 27. Appointments had been duly made to secure the following reports, etc.:

Reports of Standing and Special Committees.

I. "The Condition of Education." James Cruikshank, LL.D., Chairman.

II. Teachers' "Institutes, and the best Method of Conducting Them." S. G. Williams, Ithaca, Chairman.

III. "Classification in Physiology." Dr. T. S. Lambert, Peekskill, Chairman.

IV. "Improved Methods in Education." E. A. Sheldon, Oswego, Chairman.

V. "Duties of School Commissioners and Superintendents." Edward Danforth, Troy, Chairman.

VI. "Physical Education and Military Drill in our Schools." W. N. Barringer, Troy, Chairman.

VII. "Curriculum of Studies for Common Schools." Prof. Cochran, Brooklyn, Chairman.

Lectures and Addresses.

I. "The Higher Education of Young Ladies." Rev. A. W. Cowles, D.D.

II. "The Nature and Uses of Logic." Prof. Charles Davies, LL.D.

III. "The Study of History." Hon. Andrew D. White, Michigan.

Many of the reports and addresses were carefully prepared, and gave rise to interesting discussion.

—The August (Second Annual) University Convocation of the State of New York is to be held in Albany. The objects of the Convocation, as declared at its organization, are mainly:

"To secure a better acquaintance among those engaged in the higher departments of instruction with each other and with the regents.

"To secure an interchange of opinions on the best methods of instruction in both colleges and academies, and as a consequence,

"To advance the standard of education throughout the State.

"To adopt such common rules as may seem best fitted to promote the harmonious workings of the State system of education.

"To consult and co-operate with the regents in devising and executing such plans of education as the advancing state of the population may demand."

The Convocation avow the expectation that they will exert a direct influence upon the people and Legislature of the State, personally and through the press, so as to secure such an appreciation of a thorough system of education, together with such pecu-

niary aid and legislative enactments as will place the institutions which it represents in a position worthy of the population and resources of the State.

—Frederic Hazen Fanning, Esq., in a communication to the MONTHLY, writes, that the Utica Female Academy, which was destroyed by incendiarism, in May, "is likely to be soon rebuilt. The school being a well-established and in every respect successful institution, has the hearty support of the citizens, who will soon enable it to recommence with suitable accommodations."

—In Syracuse, the children of the public schools are to be restricted to half-rations of mental diet. The number enrolled being in excess of the school accommodations, a part of the pupils are to attend in the morning; the remainder, in the afternoon.

CONNECTICUT.—The American Institute of Instruction will hold its Thirty-sixth annual meeting in New Haven, Conn., August 8, 9, 10. Rev. Birdsey G. Northrop, of Massachusetts, President. The following lectures are announced to be delivered: By ex-Gov. Emory Washburn, "Civil Polity as a Branch of Education;" by Wm. P. Atkinson, "Dynamic and Mechanic Teaching;" by T. D. Woolsey, D.D., President of Yale College, "The Teaching of Moral and Political Duties in Public Schools;" by E. O. Haven, D.D., President of Michigan University, "The Indirect Benefits of School Education." It is expected that there will be discussions on the following subjects: "Methods of Teaching Latin to Beginners," "The Free-School System," "What Duties does the Return of Peace bring to the Friends of Education, particularly in Reference to the Freedmen of our Country?" "Methods of Presenting Moral Topics." Brief readings, by Prof. Mark Bailey, of Yale College, are announced for each day.

MASSACHUSETTS.—The Agent of the Board of Education makes a favorable report. "An increasing interest and progress," he says, "have been evinced, not only by the marked increase in appropriations, but by a better public sentiment, a more intelligent appreciation of schools; by the decline of the district system, and the consequent advancement in the gradation and classification of the schools; by the erection of improved, and in some cases costly, schoolhouses, and the introduction of better school furniture, in the face of war taxes and high prices; by the increase in the number of high schools, town libraries, and superintendents of schools; by the increased demand for graduates of our normal schools, the greater number of female teachers, and the consequent greater permanency of teachers, and

wiser and milder methods of management; by the wider introduction of gymnastics and vocal gymnastics, and lessons and instruction in com-

IPSHIRE.—The Seventeenth Annual Report of the Common Schools shows that much has been made to arouse the public mind on the subject of education. Very creditable to the enterprise of the State it has at so late a day begun to contemplate. But that interest awakened is cause for gratification. It recommends the appointment of a Superintendent of Schools, the establishment of a State Normal School, and of Institutes.

PENNSYLVANIA.—One of the most elaborate and satisfactory school documents in vogue for a long time, is the forty-first Annual Report of the Controllers of Schools of the First School District of Philadelphia, comprising the city of Philadelphia. It is a well-printed octavo, of 328 fine woodcut views and diagrams of municipal schools. It embraces various points of interest respecting the schools, the Board, by-laws and regulations. The report shows that the number of students at the beginning of the year was 74,343, an increase of 2,244 in the expenditures for the year 282,162, of which \$21,585 seem to have been incurred by the erection of new buildings. The annual cost of each student placed on the tables given in the report is \$12.47. In Philadelphia, there are educated at about two-thirds per pupil in Boston, and at one-third per pupil in New York! National Teachers' Association annual meeting at Harrisburg, 15th, 16th, and 17th of August. J. C. Keene, President.

VERMONT.—For various reasons, the State is regarded with especial interest in the first it has evinced a commendation for everything relating to education. The State Superintendent, J. R. White, is evidently indebted to his labors in behalf of the Free School, and has succeeded in establishing important points. Teachers are by

various means encouraged to perfect themselves in their profession, and stringent measures have been adopted to secure the profession from the intrusion of unworthy members, and to shield the public from the evils of incompetent teachers. In the Amended School Laws, good moral character is made the basis of requirements; diplomas and college recommendations are of no avail, as a substitute for special examination. The grading of certificates is thus provided for:

"County superintendents shall grade the certificates granted according to the following scheme, numbering them according to the merits of the applicant from one to five. Number three shall be assumed as the medium between a very good and an indifferent teacher, so that the scheme will stand thus: Number one, a very good teacher—one accomplished in every respect; number two, a good teacher; number three, medium; number four, below medium; number five, indifferent. A number five certificate shall never be granted to any teacher more than once. If, upon a second examination, the applicant is not found entitled to a higher grade, no certificate shall be granted. A number four certificate shall not be granted more than twice in succession to the same applicant. If, at the third examination, the applicant is not found entitled to a higher grade, no certificate shall be granted. When any teacher has received three number one certificates, he shall be entitled to receive from the county superintendent a recommendation to the State superintendent for examination, and if found worthy, the State superintendent shall grant him a professional certificate."

Unless revoked, "for immorality or disloyalty," such a certificate is valid during the lifetime of the holder.

CALIFORNIA.—The enterprising character of this State is manifest in its educational aspects. Its official school reports are numerous and voluminous, and are not restricted to the English language.—The Spanish residents, particularly, have for a long time been enabled to learn their duty and privileges by elaborate documents in Spanish. The latest reports show that, under the present able superintendent, the educational interests of the State are receiving assiduous attention.

CURRENT PUBLICATIONS.

are annotated college text-books, publishing Boston firm, are many publications. They are selected popular German, French, and

Italian modern writers, and issued in a neat style of typography. We have particularly examined only the German annotated series, among which Andersen's Bilderbuch ohne

Bilder' and Tieck's *Elfen and Rothkäppchen* strike us most favorably. The first of these is suitable for beginners; the other may be used as a second reader. A volume of select ballads, from the best German poets, with biographical sketches, introductions, arguments, grammatical and critical notes, in English, by the same professor, designed for advanced pupils, has been announced, and will soon be issued.

Edward Roth has dedicated a pleasant story³ "to his pupils, old and young, of both hemispheres." The story was suggested by the sight of a well-known wonder of nature among the mountains of New England. The hero of the story is Pietro Casola, a native of Acqua Chiara, a small village in Italy. Early in life he exhibited a natural talent for the art of painting. In this he was encouraged by his mother, whose earnest desire was that her son should paint some great religious picture, which would benefit his fellow-men. She suggested, as a subject, Christ coming to judge the world. He entered a famous school of art in Italy, and there pursued the study of painting until he reached his twenty-third year, when he left for the purpose of commencing his promised work. He traveled through his native land, viewing many rare collections of art, but they all failed to assist him in portraying his grand idea. The death of his father called him home. He now touchingly related his many failures to his mother. She had learned from a dying traveler that, somewhere in the wilds of America, he might find a face in the rocks that would aid him in developing his great work. He determined to see it. And with his mother's blessing embarked for America. Here he fell in with a French hunter, who chanced to be a friend of the traveler whom his mother had befriended. He told this man his object in coming to America, and found that there was good ground for hope of success. Casola and the hunter, with four Indians, proceeded to search for this great wonder. After a long journey, with its hardships and pleasures, they at length found the spot described by the dying traveler. They were on the shores of a small lake, when the Indian leader stopped, and pointed to a rock on the mountains. One glance from Casola revealed the object of his longings. He returned to his native land, where he found his mother still living. He painted his great picture, and she had

the happiness to enjoy it many years. The painting was hung in the village where every tenth year the install is celebrated with great ceremony, grave richly decorated with loveliness brought by the fairest hands. To this day revere the artist and work.

The story is really very pleasant and interesting. The style is plain and the descriptions are so vivid that one can fairly see the party journeying through the mountains of New England, the celebrations, with the young man, bearing flowers and garlands, at the artist's tomb, in the Italian village. The story will prove useful to the young man, inciting a laudable ambition, and showing perseverance under difficulties.

No manual for students is more generally and favorably known than that of which was first given to the public many years ago. New editions appear in Europe it has been translated into many languages. It has been printed in many forms—unabridged, condensed, or sometimes becoming a ponderous volume, sometimes shriveling to the dimer pamphlet. In one sense, the work is of great importance; it might be regarded as a key of historical and biographical commonplace truisms. But, in view, it is a work which has given to the world the habits and tastes of man now holding the pen of history, or words of instruction. It will yet many who are to become the leaders of other generations. And its influence is beneficial. Its facts are interesting, its advice, pertinent and in good shape. The new revised edition is handsomely and recently printed, and has the author's monetary notes.

By the study of Etymology, it is possible to acquire such a practical knowledge of the signification of words, that a person is able to determine the meaning of any word at sight. To accomplish this result will not appear so difficult, if remembered that our language contains only about three hundred root-words, that by prefixing *un* to these roots the words derived from them by other affixes, 5,600 new words are formed; and 2,900 words by *pr* and *im*; 2,400 by prefixing *co*, *com*; 2,200 by the use of *re*; 1,600 by *ad*, 1,750 by *e* and *ex*; 1,600 by *de*, by *de*. Then 2,000 more words

(1) *BILDERBUCH ODER BILDER*, von Hans Christian Andersen. 7th edition. With English notes, grammatical and miscellaneous, by Prof. L. Simonson, of Trinity College. Boston: De Vries, Ibarra & Co. 16mo. pp. 61.

(2) *DIE ERFEN. Das Rothkäppchen*. Von Ludwig Tieck. With English notes, etc., by Prof. L. Simonson. Impromptu, supra. 16mo. pp. 78.

(3) *CHRISTUS JUDEA. A Traveler's Tale*. By Edward Roth. Philadelphia: Leypoldt. Price, \$1.

(4) *THE STUDENT'S MANUAL*; designed by special aid in forming and strengthening the moral character and habits of the student. John Todd, D.D., author of "Great Cities" revised edition. Northampton: Bridgman Philadelphia: E. H. Butler & Co.

formed by annexing *ly* to other words; 1,900 by *ion*; 1,300 by *ness*; and 1,000 by *al*. Some idea may thus be formed of the extent to which one may acquire a ready knowledge of the meaning of words in our language, by learning their derivation, the signification of their roots, and of their several affixes from studying etymology.

A knowledge of the derivation of words is incidentally acquired by the study of Greek and Latin; but those who learn these languages seldom obtain, at the same time, a thorough knowledge of etymology. This subject requires a special study. Several works are used in schools to impart a knowledge of etymology, among which may be mentioned "Analysis of English Words," by Charles W. Sanders, A. M.; "The First Book of Etymology," by James Lynd, A. M., and Joseph Thomas, M. D., but no one has treated the subject so thoroughly as Prof. S. S. Haldeman, in his recent work.* While other works may be useful to beginners in the study of etymology, this work will be found useful to the college student, as well as to pupils whose studies of language have not been extended beyond their own vernacular.

Some of our educational journals reach us irregularly. The "Rhode Island School-master" makes us a regular monthly visit. The "Connecticut Common School Journal," edited by the distinguished author and teacher, Charles Northall, has reached its twentieth volume. The "Indiana School Journal" has been enlarged by the addition of sixteen pages, and will hereafter be published by John J. Parsons. One of the most sprightly of our exchanges is the "Illinois Teacher." It evinces a genial, healthy spirit, and, with short articles presenting a variety of subjects, is always a welcome guest. The "New York Teacher," established by the New York Teachers' Association, is one of the oldest of our State journals. It is still edited and published by James Cruikshank, whose labors in the cause of education have been recognized in the bestowal of a solid compliment, entitling him a doctor of laws. The students of Mount Pleasant Military Academy, at Sing Sing, of which Major W. W. Benjamin is superintendent, have assumed the publication of a monthly sheet, the "Mount Pleasant Reveille." It is issued regularly, and occasionally has some sprightly and sensible articles. Such a publication may be made interesting and profitable. We do not imply

any ill will in wishing that it may have rivals in other schools.

The "Phrenological Journal" has completed its forty-first volume. The pioneer in its peculiar branch of science, it has for a long time done more for kindred studies than any other—it may almost be said, than all other periodicals. The July number has a biographical sketch of President Johnson, with portrait and phrenological analysis of character; a biography and portrait of Secretary Harlan; very handsome portraits of Victoria and Eugenie; a personal description of the conspirators on trial at Washington. The physiological department contains an article entitled *Fat Folks and Lean Folks*, which gives many interesting facts respecting the cause and cure of obesity and emaciation. Among the numerous brief articles are many of no little value, and we doubt not that the "Phrenological Journal" is at least as efficient an auxiliary to the cause of education as some of the technically educational journals.

"Bernard's American Journal of Education," for June, contains 1. Biographical Sketches of the Presidents of the American Institute of Instruction; 2. Pennsylvania State Normal School at Millersville; 3. Progressive Development of Physical Culture in the United States; 4. History of Various National Societies for the Advancement of Education; 5. History of the System of Common Schools in Connecticut; 6. Public Instruction in the Free Cities of Germany; 7. Public Instruction in the Duchy of Arnhalt; 8. Proceedings of the New York State Teachers' Association; 9. Hints to Young Students on Studies and the Conduct of Life, by Men Eminent in Literature and Business; 10. Chronological Catalogue of Educational Periodicals, from 1811-1864. This number has a portrait of the Rev. Samuel R. Hall. It announces that the number for September will be devoted exclusively to the proceedings of the several State Teachers' Associations, with biographical sketches of their presidents. These sketches of more than eighty of the prominent teachers and promoters of educational improvement in the different States, will be accompanied by upwards of twenty portraits. In the list we notice the names of Davies, Woolworth, Sheldon, Hazeltine, and Stoddard, of New York; Edwards, of Illinois; Gregory, of Michigan; Peckham, of New Jersey; Andrews, of Ohio; Camp and Huntington, of Connecticut; Hagar, Pariah, Stone, and Sheldon, of Massachusetts; Weston, of Maine; Coburn, Wickersham, Bates, and Allen, of Pennsylvania; McJilton, of Maryland, and other representative teachers of the different States.

* APPENDIX, IN THEIR ORIGIN AND APPLICATION, exhibiting the Etymological Structure of English Words. By S. S. Haldeman, A. M. Philadelphia: E. H. Butler & Co. 12mo., cloth, pp. 271.

SCIENCE AND THE ARTS.

—In the last number of the MONTHLY an allusion was made to the experiment by which starch sugar had been obtained in a hard, granular condition. To obtain this result the starch is first treated with sulphuric acid in the usual manner. The neutralized solution is then evaporated in a wooden vessel, allowed to rest and to solidify gradually. The mass of raw sugar is then removed and strongly pressed in a cloth, the syrup which is pressed out being reserved and boiled down in a fresh operation. After pressing, the sugar is melted and further concentrated in a water bath until the liquor reaches forty-three or forty-five degrees Baume. When this point is reached, the melted sugar is allowed to cool, with an occasional stirring. If it is desired to obtain the sugar in small granules, the stirring is continued. When this mass has cooled to twenty-five or thirty degrees, it is removed and dried in a gently heated drying-room.

—The fossil remains of the horse indicate that this animal inhabited the United States during the post-pleistocene period contemporarily with the mastodon, megalonix, and the "broad-fronted" bison, and was not originally imported into America from the East, as generally supposed.

—Experiments indicate that paint on surfaces exposed to the sun will be much more durable if applied in autumn or spring, than if put on during hot weather. In cold weather it dries slowly, forms a hard, glossy coat, tough like glass; applied in warm weather, the oil strikes into the wood, leaving the paint so dry that it is rapidly beaten off by rains.

—Coal put into bins and leveled can be measured, from one to a thousand tons, with as much accuracy as it can be weighed on scales. For instance, Lehigh white-ash coal per ton of 2,000 pounds, of the egg or stove size, will uniformly measure 84½ feet cubical, white-ash Schuylkill coal will measure 85, and the pink gray and red-ash will reach 86 cubical feet per ton of 2,000 pounds, or 40 feet for 2,240 pounds, the difference of cubical contents between the net and gross ton being exactly 4 feet. If the length, breadth, and height of the bin be multiplied together, and the product divided by the aforesaid contents of a ton, the quotient must show the number of tons therein.

—The proper mode of introducing the desirable French system will be for Congress to pass a law making it the legal system at the end of five or ten years; so as to give the several States an opportunity to have it thoroughly taught in the public schools.

—A new system of locomotives has been invented in France, so as to surmount considerable difficulties in describing curves of a small radius. These engines have four cylinders as divided into two groups of three by the pistons of one pair of cylinders. The wheels are so small that the fire boiler extends beyond them, so that it requires an unusually large space to facilitate the describing of small curves. Little play is left between the fire wheels which keep the train steady on the rails, and the axles have some sockets.

—In the alluvial basin of the Plata have recently been discovered many of fossil bones, many of which were deposited in the Museum of Buenos Aires. Among these are the thigh bone of a Megatherium, of a much larger size than seen before; large horses' heads, teeth, and a whole skeleton of the gigantic animal of the order Edentata, having no teeth in the front. This Glyptodon is nearly nine feet in height.

—It has been recently discovered that sulphate of copper is an excellent preservative for wood. Pieces of wood of any dimensions may be preserved by immersing them in a solution of sulphate of copper for eight or ten days. At the Garden of Plants in Paris, two kilograms of sulphate in ten liters of water is found very useful in preserving the mats with which the floors are covered.

—A new method of concentrating mineral waters of Saratoga has been proposed—that of freezing. A portion of the water will be frozen, and the ice containing all the mineral salt then be boiled. The water so obtained is agitated during the process of freezing, so that the frozen portion will collect in a milky snow.

—M. Giffard, of Paris, has been constructing a steam-engine for propulsion, whose weight bears a proportion to that of ordinary engines of equal power. The first model, under his superintendence, has been run with success at a pressure of ten pounds to the square inch, and he anticipates that he will soon be able to run the pressure to three thousand pounds. This engine, placed in the car, propelling screw, furnished with vanes, which in calm weather will propel the balloon through the air at the rate of

miles an hour. The car will hold three days' supply of coal and water. By means of a condenser, the same water can be used over and over again. The balloon will be made of two thicknesses of muslin, with an intervening thickness of India-rubber.

—The triangulations of Central Europe have been commenced in Austrian territory. The first point of the first order is situated on the height of Doblitz, near Prague. The longitude of Doblitz was determined by an electrical connection with Leipzig.

—Permission to work a French patent for the manufacture of brandy from coal gas has recently been purchased for a large sum by an English company, and the work is to be started in London.

—A successful experiment was lately made in Paris for the preservation of grain from fermentation and the attacks of insects, by inclosing it in a metal vessel and exhausting the air. Ten hectoliters of wheat were placed in a metal vessel, and the air was exhausted. The vessel was opened after fifteen days, and the weevils, which were seen quite lively when the wheat was placed in the vessel, had quitted their cells and were dead. They were warmed, but did not stir. Placed on white paper, they were reduced to powder, without leaving any stain on the paper. Experiments on wheat under glass, prove that the weevil retains life longer than any other insect when deprived of air.

—A lamp has been invented by which photographers can employ the hours after sunset in multiplying negative copies from positive pictures taken during the day. Light is obtained from two streams of oxygen, one pure, the other saturated with ether, or some spirit rich in hydrogen, the jet of flame impinging on a cylinder of lime.

—Water moves miles horizontally, while it moves only a few feet vertically. If the earth were covered with an ocean of uniform depth, the tides could be easily calculated in a mathematical way, but the irregularity of the depths of the sea, and the shapes of the continents, make it complicated. Investigators would do well to devise some means of recording horizontally,

as well as vertically, the motion of the water. The tides are one and a half to two days old, according to the coast. At Bombay they are one and a half days old; that is, the semi-diurnal tide. But the diurnal tide is not more than a few hours old. Tides of a longer period are much more accelerated by friction than tides of a shorter period.

—For the health of passengers, paddle-steamers are found to be superior to screws, as it regards oscillation; but the atmosphere in screw-steamers is rather better, the engine being apart from the rest of the vessel. Nautical diseases have in a great measure lost their virulence, on account of the short time in which passages in steam vessels are effected. The frequent renewal of air caused by steam is, to a certain extent, a preservative against maladies peculiar to hot climates.

—The main wheel of an American watch makes 4 revolutions in 24 hours, or 1,440 in a year; the second or center wheel, 24 revolutions in 24 hours, or 8,760 in a year; the third wheel, 192 in 24 hours, or 69,060 in a year; the fourth wheel (which carries the second-hand), 1,440 in 24 hours, or 525,600 in a year; the fifth, or 'scape wheel, 12,960 in 24 hours, or 4,728,400 revolutions in a year; while the beats or vibrations made in 24 hours are 888,800, or 141,812,000 in a year.

—A new pigment, calculated at the same time to increase the resources of the decorative painter, and to afford a ready means of preserving iron and other metals, has recently been introduced at Paris by M. L. Oudry. He first obtains a pure copper by throwing down the metal by the galvanic process; then reduces the precipitate to an impalpable powder by stamping. This powder is then combined with a particular preparation of benzine, and used in the same way as ordinary paint. Beautiful bronzed effects are produced upon it by means of dressing with acidified solutions and pure copper powder. The articles painted with the new material have all the appearance of electro-bronze; its cost is less than one sixth; it will last from eight to ten years. Mr. Oudry also proposes to substitute benzine oil for linseed and other oils.

MISCELLANY.

—Mrs. L. H. Sigourney, whose death at an advanced age is announced, was perhaps more widely known and universally respected than any other American poetess. She was born in Norwich, Conn., September

1, 1791, and in 1825 published her first volume of poems. Her maiden name was Huntley, and she was married to Mr. Chas. Sigourney, a wealthy Hartford gentleman, when she was twenty-eight. Previous to

that time she had taught school. Since then, though rearing a family of children, she found time to produce nearly fifty volumes. Her prose is marked by vigor, beauty, and good sense, and, like her poetry, is full of good moral precepts. Her poetry belongs to the school in which we look for such names as those of Dr. Beattie, Hannah More, Mrs. Barbauld, and Dr. Watts.

—The Trenton *Monitor*, speaking of a contributor to the comic paper called *Mrs. Grundy*, quotes the *Troy Times* as to his talents that way: "To us a village cemetery at the soft and pensive hour of twilight, is wild hilarity compared to the humorous writings of Mr. Thomas Dunn English!"

—One of the novel features of the war just brought to a close, has been the use of the magnetic telegraph for military purposes. At the commencement of the present fiscal year, there were in operation 8,500 miles of military telegraph, of which 76 miles were submarine—of this 8,000 miles, including 38 miles of submarine telegraph, has been constructed since the war broke out. One million eight hundred thousand telegraphic messages were transmitted during the year, at an average cost of about thirty cents.

—Several years ago a peasant lad, about ten years of age, in the neighborhood of Campen, when sent to mind his father's cow, would tie her to a tree, pass the whole day in drawing her in different positions, and take her home at night almost starved. M. de Keyser, Director of the Royal Academy of Antwerp, secured him the advantage of a regular course of instruction. Seven years have passed since this epoch, and the little peasant, whose name is Charles Ooms, has just obtained the Antwerp Academy's first prize for his paintings.

—Mrs. Lincoln has presented to Mr. Williamson, her boy's late tutor, the shawl worn by Mr. Lincoln in his perilous journey to Washington in 1861.

—Spurgeon, in a charity sermon, related a joke about a poor minister who required cash, and was met by the remark, "I always thought you preached for souls, not money?" The minister replied: "So I do, but I can't live on souls, and if I could, it would take a great many like yours to make me a breakfast."

—Thomas Hood, the son of the famous humorist, has become the editor of *Fun*, the weekly paper published in London as a rival to *Punch*.

—There is a woman in Quebec 113 years old. Her children, grandchildren, and great-grandchildren, number 226.

—A play, entitled "Abraham Lincoln; or, the Civil War in America," is on the boards of a Vienna theatre.

—An old waiter, having got a lottery, retired into private life; but died of him, as a fact, that he could not a bell ring without crying out, "air." Such is the force of habit.

—A number of peasants, on a work in the fields, after their midday meal, lately, missed one of their comrades, and on looking about found him sitting in the agonies of suffocation caused by a large snake, commonly called the coluber milo, which had introduced itself into his mouth while he was asleep on the ground. About one-third of the snake's body was in his mouth and the rest coiled tightly round his head, so that before the viper could be extricated he would have died.

—The father of Grace Darling, recently at Banburgh, England, in 1842. He some years ago resigned his position as keeper of the Lapstone Light, where occurred the celebrated scene in which Grace Darling conferred luster upon her sex. Grace died of cholera in 1843, aged 27.

—At a meeting of the New York Historical Society, Gen. Cochrane read "showing that the waters between Long Island and New Jersey, viz., the Long Sound, and Raritan Bay, are not waters of New Jersey waters, but always have been and are parts of the Hudson River and the waters of New York."

—When Maurice Margaret was in Edinburgh for sedition, the Lord Justice Clerk said to him, "Hae you ony counsel, mon?" "Do you want to hae ony appointee?" "Only want an interpreter, to make me understand what your lordship says," he replied.

—A man of genius can no more do without himself of freedom of opinion than a man of sense can do without the features of his face.

—Flies seem to be exempt from the pains and penalties that generally attend intruders and interlopers. They do their own business, and that occupies them principally in meddling with the domestic business of humanity, lighting the pipe, making tracks over a bald pate, getting in the coffee cup, and submerged in the butter; and doing many other things that flies ought to be ashamed of in their quiet moments. We are fond of flies; we may say that we are—in their proper place—but we insist on having them served upon our plate, or not at all. We like their applause, and the buzz of fame, but of a fly is our detestation. Recommend them to our friends, but save us from, especially the family fly, that is a host-killer one, and a brigade reinforcement. We hate flies generally, the brevity of this article is owing to repeated and frequent assaults.

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THE STORY OF PETER PEDAGOGUS, A SWISS SCHOOLMASTER OF THE OLDEN STYLE.

CHAPTER I.

A Swiss Protestant schoolmaster. On the 31st of July, 1836, I was standing before the front door of my humble cottage when one of the police officials handed me a letter from the School Commission. I was requested to call upon him at a certain hour precisely, as he had a communication to make me.

"What does he want?" thought I, "he wants to tell me on what scale I have been rated, and on what basis of stipend I am to expect."

I leaped for joy, and would have been a messenger a batzen, had I had one about me.

The Federal Council, at the suggestion of the Board of Education, had awarded me, a sum of 40,000 Swiss francs, and, in addition, another, a further sum of 50,000, for the purpose of subsidizing the school.

Inspectors had been roving about the district to find out who, on account of superior talents, were entitled to a share in the bounty. The examiners, sagacious and experienced men, went very courteously through their proceedings. I considered that I had come off very fairly indeed, and so framed my replies that they could find nothing whatever to say to them. A friend who was present, agreed with me, saying that I had undergone the ordeal bravely.

Gold and silver apples hung close to the wall, and we opened them wide—but they did not fall into them; I was reposing quietly in the state of contentment, though our desires had been

greatly excited, our socks were still empty.

It may be imagined how overjoyed I was on receiving the letter. Like a child on new-year's morning, I ran to announce to my wife our good luck, which, however, I could only describe as an unknown quantity. Pressing her to put the last piece of meat into the soup, I said it would do her good, and that she might set her mind at ease as to the rest. Then I took my little pot of hot water for shaving, a part of which I spilled on my hand, and, with scalded fingers, made two or three scratches on my chin; but, as I actually vibrated with joy, I felt not the slightest pain, tranquilly covering the wounds with plasters of tinder.

This being Sunday morning, as I was a precentor in the church by virtue of my office as schoolmaster, I went to the minister for the psalms. When the heart is full, the tongue is relaxed; and I spoke to his reverence of my anticipated elevation. The announcement seemed to afford him pleasure, a circumstance that astonished me; for we believed the clergy grudged us better pay, and that it was owing to them we had not long before had an increase of stipend. How this notion had entered into our minds, I do not exactly know; for, on the other side, I had often heard the farmers say they could never satisfy the clergy as to what they gave towards the schools and salaries of the schoolmasters.

At church the minister gave out the psalm in *mol*, which annoyed me greatly, as my spirits were too elated to sing in a

grave tone, and the organist moreover played unusually slow. I could not for the life of me keep the time in *mol*, and sang the hymn of praise according to the tone of my own heart, high and quick, as the blood sped merrily through my veins.

The result was a singular medley, which caused a good deal of talk, there being doubt as to who was to blame. I sang on in lively strain without observing that the organist was gradually falling behind me, though he sometimes looked angrily across his shoulder. That part of the congregation who happened to be in a good humor followed me, whilst those who had cares to trouble them lingered behind with the organist. The minister, no great hero in music, tried to keep pace, sometimes with the one and sometimes with the other. It was not till I arrived at the end of the psalm, and with my co-singers was silent, that I noticed the playing and singing still continued. Then I awoke from my day-dream, and stared in my turn at the organist with a look of surprise at his mistake; but he paid no attention whatever to my signals of displeasure.

What the subject of the minister's discourse that day was, I am unable to say; and you will perhaps pardon a poor schoolmaster for his shortcomings in this respect, when you reflect that he had only eighty Swiss francs a year, and five healthy children, but who now thought himself on the point of obtaining a share of 90,000. Oh! could you look into such a heart and behold how the pleasing anticipations crowd, and swarm, and throng, hurrying and devouring each other, in a manner scarcely conceivable! To form an idea of such a state of things, put a glass of vinegar, modern fashion, under a magnifying glass, and witness the world of animalcules thronging about, annihilating and reproducing each other in never-ceasing activity. First come to the surface debts to be paid; these are swallowed by a thousand pressing necessities that present themselves in manifold variety, from deficiencies in the supply of children's stockings to the over-bed that wanted a new covering; in turn, these give way to a whole flood of wants that roll up dense and dark, overspreading the entire horizon of the thoughts.

Ah! the multitude of desires that spring up in the mind of a schoolmaster, with eighty francs a year and five children! How infinitely varied are the things he has had to do without, from a new pipe to that book which contains all that he might want and all that he might yet need to know!

I was quite frightened when the people rose up, for it was not till then I recollected being present at a sermon. Had I been asleep and set a bad example? Collecting myself, I joined devoutly in the prayer, and this time kept better pace with the organist.

At home, my wife had never seemed so slow in getting dinner ready; but never did I enjoy the meal better than this day. The good lady cast a doleful look at her last piece of meat, whilst I, merry as a cricket, was playing with the children. At last she said to me, "Peter dear, if I were you, I would not sell the hide till I caught the bear." I wiped my mouth, laughed at her, tied on my very best neck-cloth, and started off. Speeding on the wings of expectation, I was at the place of my destination long before two o'clock; but I could not then see the commissary, for he was still engaged examining the school-children.

The hearty dinner and the quick walk had made me thirsty, and excited a desire within me to take a drink, an inclination which, under ordinary circumstances, I should have repressed; for I hold it wrong in a man to indulge himself whilst his wife had to say to the children at home, when they ask for a slice of bread, "No, wait a bit, and you will have some potatoes." With the exception of six kreutzers left with my wife, I had all the ready-money we possessed, which consisted of four batzen and a half. That is not much; but still, I thought, a man who expected a share of 90,000 francs, might spare a chop-in out of it.

On entering the parlor of the inn, I noticed a number of people making merry in a private room; and before I had ordered my chopin, some one called out: "Hallo, Pedagogus, have a glass with me."

A schoolmaster, and one who has only four batzen and a half in his pocket, is not

to demur at such an invitation ;
to see who offers it, and so
the speaker was an under-teacher,
sitting with joy, sat at the head of
dressing his guests as the giver

Ordering a chair to be brought
asked me to sit down and help
whatever I liked. I had dined
at I could not eat, but did not
loss of wine, wondering all the
a person in his position could
so extravagant a style.

the appearance of the persons
at the table, I judged that a christ-
being celebrated. Calling to

the under-teacher had been
at long before, I concluded that
was rejoicing over the advent of
him. The fool, thought I, fancies
to be the eighth wonder of the
world is probably forming schemes
to secure for it at least the
school Commissary. He does not
now that all fathers have the
word about their first boy ; but the
which materially alters the state of
affairs and dolefully they then
west seat at the table, and, on
advance of the eighth or ninth,
inclined to slip under it alto-

gether was not destined to remain
in place as to the true cause of
exultation, and the reason why
every thing had been placed on

me on your way to the commis-
sary not ?" said he. " Well, I
may have as good news for you as
me. I am in a rapture of de-
light we came out of church to-day,
I had been classed at 800 francs
I thought on the reception of
this news I might enjoy myself
a little."

He admitted that he was justified
in it, and my own position seemed
black, but began to assume a
rosy hue ; for, thought I, when
young, who has scarcely escaped
trials, and has had no sphere to
his capabilities beyond the Normal
School, been nominated to 800 francs
that ought not I to look forward
with sides being forty years of age,

had kept a school for nearly a quarter of a
century and had commenced with very fair
testimonials ?

I could not get away until the hour of
my appointment was long past. On leav-
ing, I promised to look in as I returned and
report my success ; then with long strides
I hastened to learn what estimate had
been made of my abilities.

When I arrived, the commissary was
walking up and down in front of his house,
enjoying his afternoon whiff. Greeting
me kindly, he expressed a hope that I had
been put to no inconvenience ; " for," said
he, " you would be pretty sure to learn
the news that I have to give you soon
enough."

" That is a curious remark," thought I.

" Yes," he continued, " I am sorry for
you and some others, that things have
turned out as they have done. I can not
comprehend what they are about at Berne ;
but such is always the way with people
who imagine they possess infinite wis-
dom."

" The old gentleman is a little addle-
pated," thought I ; " for, if the councillors
at Berne who allowed 800 francs a year to
our under-teacher by way of a beginning,
have endowed me in any thing like the
same proportion, that is as much wisdom
as I could reasonably expect them to pos-
sess ; it would be barefaced to look for
more."

" What, then, Mr. Commissary, have
they done ?" I inquired. " Very likely
they have acted to the best of their ability,
and people such as we are easily satisfied ;
enough to keep away misery is all we
want."

" Just so," rejoined the commissary,
" and you will not have that for some time
to come, I fear, if things go on as now.
What you say is the reason why I regret
to communicate to you the intelligence I
have received. The authorities have not
granted you an augmentation of salary,
and have placed you in the class to which
they can not allow a stipend of 150 francs.
But on amending your qualifications, you
are at liberty to make a fresh application ;
and, so far, you may consider yourself
fortunate, for had you been a month older,
at the date of your examination, you would

have been declared incapable of improvement."

On hearing this statement, I stood staring with open mouth, and for a time could neither shut it nor move my tongue. At length I managed to stammer out, "I hope things are not so bad as you say."

"Unfortunately," replied the commissary, "they are exactly as I have described them, and I can let you see the declaration in black and white, if such is your wish."

I would gladly have stayed, and vented my affliction there and then, and at the same time asked whether any thing could be done to alter the decision; but I observed that the old gentleman was as much pained as I was.

With heavy heart I moved disconsolately away. I did not keep the promise I had made to return and let the merry-makers know how I had fared. Who will blame me, if I did not choose to parade my disgrace before the under-teacher and his friends?

I would gladly have welcomed a sympathizing heart, into which I could have poured my sorrows. Heavily oppressed, I felt as if I were walking knee-deep in mud, and a sheathing of lead incased my members. Every man I met startled me, fearing he might see by my appearance that I was a schoolmaster who had been deemed unworthy of 150 Swiss francs a year.

To avoid a group of bowlers, I slunk into the shade of a pine wood, where every thing was as gloomy as my own thoughts. My distress rose up like a spectre before me, expanding and becoming more fearful as I advanced. Throwing myself down, I hid my face in the damp moss and wept bitterly, every thing within and around me seeming dark, woe-ful, hopeless.

Ah, my fellow-creatures in adversity, should you desire that your tears may dry up, do not press your eyes on the bosom of the earth. Lift them upwards, thither where the sun shines, the stars sparkle like bright witnesses of the everlasting Light, that can transform sorrow into eternal joy. Those visible signs in the heavens affect the mind, and dispose it to cheerfulness and comfort.

Whilst brooding over my miseries the sun went down, and the stars were hidden behind the clouds. Thus, owing to the obscurity without and the darkness within, I could scarcely find my way.

The nearer I approached home the more downcast I became. What, thought I, would my wife say to the sad result? Should I at once confess what had transpired, or conceal it for a time?

I had not altogether concluded what to say when I arrived at the house.

Peeping in at the window, I saw the children ranged round the table singing a school-song, while their mother was sitting in the stove corner, with her head leaning down, so that I could not tell whether she wept or was asleep. This determined me to disguise the truth as long as possible, by giving equivocal answers and feigning cheerfulness.

Forcing a smile into my countenance, I entered the room with a bold "God grant you all a good evening!" The children started up, exclaiming "Good evening, father;" their mother, quickly drying her eyes, came forward, and saying, "You are late," sat down at the table, and then added, "I know you would like something warm, and I have got something for you."

In serving up the supper she asked no questions, but looked into my face, whilst I exerted myself to joke with the children; but I could not muster courage to say, "Mother, it has turned out badly." When the children had gone to bed, she sat down by my side and said, "Now, am I not right; you have been unsuccessful?"

I would not confess, but she absolutely refused to be deceived, asserting that she knew me too well to be mistaken in her impressions, and could tell by the first look whether I felt easy in mind. At last I had to communicate the misery I felt. She wept, and I tried to console her; but found I was in more need of consolation than she was. Indeed, our attempts to mitigate each other's sorrow only made the mutual grief more apparent. Next we tried to form projects, resolving to rise earlier and go later to rest; but on reckoning up, we discovered this would not much mend matters, for my hours of duty if increased would in no way augment the pay.

a thought of scattering our children at the good people who had to take charge of them. This injured us both so much that it was upon. After exhausting our leas, my wife remarked that it and, as we were both tired, we to bed.

commending ourselves to God, the was adopted. Sleep, my mother say, was the great ocean in r people drowned their miseries; always came up to the surface; each time they were lighter. However, I could not. Gloomy haunted me like evil spirits; a imosity arose within me against who had placed so low an estimate on my attainments, and I felt declined to go to law with them, in justice in that way. At last, sleep came, and put an end to emulations.

only changed the current of my the phantoms of a vision took of my brain. I beheld the ly open and give entrance to a n schoolmaster of the neighborhood was a quarrelsome fellow, stature, thin and wiry; his white over his eyes, and a large pore with a straight short stem in . Holding a long writing in his placed himself, with his turned a the centre of the room.

" said he, "I dare say you have much as I have. I passed for man, always professed to be people believed me. Now the came and placed me in a lower elt myself and the credit of the njured by this proceeding. I ie people would have risen and their obedience, on account of ; been treated in such a scurvy But no such thing; they are l blockheads, afraid of the mag- are delighted at my disappointment. I am a great deal too clever for ow I have drawn up a petition reme council, which I know to sed of patriotic men. I shall you, for I want you to sign it." Ition began by stating that the

Board of Education demoralized the people, allowed the teachers to starve, interfered with things they did not understand, and squandered away the schoolmaster's subsidies. Next it averred that the Government Council, by a treacherous silence, showed itself perfectly ignorant of the art of governing. Then came a variety of things about the clergy; how they alone were favored; and how it would be acting more wisely to pay teachers such salaries as the clergy had, since the former were of more service than the latter; adding that for aught the petitioner cared, they might transfer the stipends of the schoolmasters to the clergy. He (the petitioner) then spoke of the Superior Court, of the reactionary proceedings, and of a great many other things that I did not very clearly understand. Then came the conclusion, in which he demanded that the Grand Council should appoint a commission to bring the accused authorities to trial, and craved the councillors meanwhile to suspend the Superior Court, the Government Council, and the Educational Board from all their functions, so that no further mischief might ensue.

When he finished reading, he began to search for pen and ink, so that I might sign the document.

At this moment another figure glided forward from a corner of the room. How it had got in, I know not. It was that of a lean man, with a red face and remarkable nose. In one hand it held a good-sized cake, and in the other a bottle. It stood behind the schoolmaster, and shook its head very vigorously, making a variety of contemptuous movements with the cake, and at last began to speak, but in such a way that the other did not hear a word.

"Pedagogus," began the figure, "I have heard of your disappointment, and have come to condole with you. Behold this bottle. It contains old apple brandy of 1884, that will always refresh you, and the bottle will never get empty. Do not listen to that envious fellow there; envy is but a sorry passion at the best. As for railing against the clergy, disappointed men are very apt to do that. There are, no doubt, covetous, bigoted, ignorant men in the Church; but, if the examiners have

rated you too low, and others too high, they alone are to blame—not the clergy, the Superior Court, the Government Council, or the Board of Education. Nevertheless there is good fortune in store for you yet. A time will come when presents will be showered upon you, like manna in the desert. Coming home, your knapsack will be always full, and you will be able to feed your children like young ravens in the brook. Many a joy you will possess. You will be extolled over mountain and valley; ladders will be placed against your chimney, and hams and sausages will abound in your kitchen; all your miseries will be at an end. Therefore be of good cheer, and eat a slice of my cake, and drink a glass of my brandy, instead of signing envious petitions.”

Meantime the schoolmaster, who had struck a light, lit his pipe, and found the pens and ink. Advancing toward me, he presented the petition for my signature, just as the other handed me a glass of his brandy; and there I lay, doubtful which to accept.

I wavered between the two like a reed in the blast. I could not well refuse to sign the petition of the little schoolmaster, for, small as he was, I feared him. Yet I was reluctant to append my signature; for I knew that the little man might, in the end, have himself and all concerned with him hung, particularly if the parties he was petitioning against remained masters. Then the apple-brandy and the cake were inviting. What could I do? Flesh and blood inclined me to yield to the eating and drinking—yet I hesitated.

The two tempters had drawn nearer and nearer, the schoolmaster stretching forth

the paper in one hand, and holding his pipe with the other; whilst his opponent, holding the glass and the cake, pressed his bottle to his breast. Adopting a middle course, I held my hand tremblingly for the paper, and shoved my mouth toward the brandy. This brought the two into contact, they touched each other, started back and stared at each other, as if doubtful how to act. Advancing again toward me, the little one wielded his pipe as a shield against the foe, and the other prudently covered himself with his bottle.

Not wishing to offend either, I continued passive. They, seeing that I was not likely to decide the contest, entered into a desperate struggle. I felt the paper thrust into my hand by the one, and the fiery fluid poured down my throat by the other. The pipe and the bottle were smashed in the conflict; both the combatants, falling upon my body, weighed me down, as if a rock were resting on my breast. In their rage, the one thrust some of the cake into my mouth, and the other did the same with his petition. Being thus nearly choked, my senses left me.

I awoke, bathed in perspiration. My wife, finding me trembling and moaning, had roused me. My body seemed bruised all over, and it being morning, I got up, but was even more dejected than on the evening before.

Seeing my mental depression, it occurred to my good wife to send me to the residence of a friend, that he might cheer me. This learned and eccentric friend whom I visited, persuaded me to write the chapters which will follow. I trust they will interest and profit my fellow teachers in America.

MEANS OF MENTAL DEVELOPMENT.

A CONTRIBUTOR in a late number of the MONTHLY said, “Human intelligence may be developed by two methods—by classical learning, and the mathematical studies; good educational instruction re-

quires both.” This proposition asserts that all mental *culture* comes from two branches alone. Other studies, the writer would perhaps grant, are very well for other purposes—as, for example, the study of natural

history, etc.—but are nothing worth discipline and development of the powers.

preposterous as this proposition is, form, it is very widely received and upon by those who are engaged in education. The plan of education in our schools and colleges is almost universally built upon this dogma. Look for a moment at our colleges. When a young man is examined for admission, the examination is only in relation to language and mathematics, and not a question is asked as to the natural sciences. Any knowledge of them is considered superfluous as concerns his being fitted for his course. Then after he enters college he is drilled in the same two branches for two long years; and in the last years of his course he is taught, but the circumstances of the case very distinctly, in some of the natural sciences. This is, which I know to be strictly true of the colleges, is, so far as I have learned, the main at least, of the colleges in our country.

The result is, that the graduates of our colleges fall far short of obtaining such a knowledge of the natural sciences as should be possessed by any one who appears before the community in the character of a reformed man.

Moreover, from the influence of the common general system of education, the exclusion of natural science is effected in the schools, not only those which are preparatory for the college, but in others also. Here and there is an exception, but for the most part the dogma of the colleges as yet pre-

cludes the exclusion of natural science from every part of education is based upon false ideas—the one already mentioned, the idea that natural science cannot intelligently be studied by very young persons. The short space of an article will not admit of only the throwing out of some hints touching the former.

One can dispute the general statement that *the act of acquiring knowledge of the natural kind has an influence in developing the powers of the mind*. In other words, the mind into action strengthens

and develops it, as muscular exercise strengthens and develops the body.

We advance another step. *Exercising the mind on some subjects develops the mental powers more than exercising it on other subjects*. The general rule on this point is, that the subject which awakens the most activity in the mind is the most valuable in this respect. Tried by this rule, natural science can not be put upon an inferior level. Every one will admit at once that its investigations call forth quite as much mental effort as the study of language. How is it now as compared with mathematics? Are not some of its grand conclusions capable of arousing the mind to as high and extended flights of thought as any of the greatest of mathematical solutions? Indeed, do not the mathematics derive their highest interest from their application to natural science, and thus show that the two are fitted to go hand in hand together in “developing human intelligence?”

We go a step still further. *In developing the mind each branch of study has its peculiar province*. It is manifest to every one that the mind in the study of mathematics is brought into a state of action different from that which occurs when it is studying language. The same is obvious in a comparison with the study of natural science. For a full and systematical development of mind, then, different branches of study are required. If any one be pursued to the exclusion of the rest, there will be an unsymmetrical, a distorted development. This is often seen in the influence of an undue prominence of mathematical study. This study serves to give definiteness to mental action, but fails to secure that range of action which is required in most of the circumstances in which the mind is called to act in life. In other words, while it gives strength and clearness, pursued alone it shuts up to such strictness that it inevitably narrows the mind. This is often seen. A man may have the most thorough and extensive mathematical training, and from the possession of mathematical genius may arrive at great eminence; and yet he may be, in the ordinary sense of the term, a poor reasoner—poor at making an argument—poor at arriving at such conclusions as must be

formed in the every-day business of life. Other training is needed here in connection with the mathematical. The study of language will partly supply the deficiency. But I know of no study which will do so much in this respect as the study of natural science, for this introduces the mind to a wide observation of various facts. It is the grappling with facts that not only gives to mental action an eminently practical character, but liberalizes and elevates it by the wide range of phenomena open to us in nature.

Much of the reasoning used in natural science and on ordinary subjects, it should be observed, is not strictly mathematical. Mathematical reasoning has to do with few points, and is, in a certain sense, simple. But many of the reasonings in natural science take in a large range of points, some of them often mere analogies, and are therefore very complex in their character. The same can be said of the reasonings upon which much of human action is based in business, politics, etc. If the strictness, not to say narrowness, of mathematical reasoning were to be applied in such cases, much of what we now consider settled must be marked as not proven, and doubt and uncertainty must everywhere be introduced.

It is what are called the observing powers that are most prominently cultivated in the study of natural science. And here let it be distinctly understood what I mean by observation. I do not mean the bare collection of facts through the action of the senses. Observation implies thought guiding the collection of the facts and making out their relations. It therefore implies reasoning in connection with the action of the senses. A good observer is a good reasoner, and is not a mere fact-hunter. Premising this, I remark that one of the chief aims of education should be to cultivate this observation. This is the basis of success in life—a true success. It is what makes the *well-informed* man, and fits him for the varied exigencies that may arise in his course.

One means of cultivating this observation is found in the study of natural science, for it supplies from earth, air, and water an abundance of facts to call forth

the action of the observing powers. But to secure the result, the study must be pursued aright. The chief object of instruction should not be, as it often is, to load the memory with the technicalities and hard names of science. The teaching of facts and simple fundamental principles should be the prominent object throughout, while the technicalities and terminologies should be kept in the background, should not be introduced at all at the outset, and should be brought out gradually, even cautiously, as the pupil advances in his course of instruction. As an illustration of the wrong way of teaching natural science I would mention the common mode of teaching botany. The classification of plants is made the chief thing, while the interesting facts and principles of vegetable physiology, which should constitute the body of the study, are very much left out of view.

Adopting the plan thus indicated, natural science can be taught throughout the whole course of education, beginning with the child as soon as he learns to read; for there are phenomena all around us which can be made intensely interesting to the child; and the teaching of these facts, accompanied with such explanations as he can comprehend, is really teaching the beginnings of science. Much of what is called object-teaching can be made to assume this form.

Important as it is that the observing powers should be cultivated, not only is there a failure to do it in education, as it is commonly pursued, but the action of these powers is actually repressed, especially in the earlier part of the course. The child is alive to see all that is around him, and is full of inquiries about the phenomena that he witnesses. He is an observer, or in other words, a young philosopher. He is in an attitude of mind to learn a great deal, and will do so if he be taught aright. But subjected to the drudgery of rote-learning in the schoolroom, and practically given to understand that observation is no part of education, but that learning consists in spelling, reading, committing to memory words and forms of expression, and ciphering, he gradually gives up what the teacher would call his troublesome

reness. This unnatural course has influence, that it is a general fact that children are not as good observers at seven years of age, as they are at eight. A discussion of these points would make this article too long. In conclusion, we state, that there are indications of a change in the general plan of education, and of the setting aside of the humdrum

drudgery of rote-learning, and the introduction of the study of things in place of the mere memorizing of words and forms. This is the grand reform that is needed, and we never shall realize fully what education is, until natural science is put on a level with the study of language and of mathematics, and, like them, is taught in proper gradations, from the outset of education throughout its whole course.

PEDAGOGICAL LAW.

II.

If teachers may understand the general feeling, as well as the law, on the important subject of corporeal punishment, we will cite the opinions of the highest authority in every instance the identity of feeling in which they were delivered.

When the Hon. John A. Dix was President of Schools for the State of New York, he gave the following as his

The practice of inflicting *corporeal punishment* upon scholars, *in any case*, has no sanction but usage. The teacher is responsible for maintaining order, and he must be the judge of the effect and nature of the punishment when his authority is set at defiance. At the same time he is liable to be injured for any abuse of a power which is wholly derived from custom. *Common Schools Decisions*,

by all authorities all one way.—The Supreme Court of Indiana expresses its opinion as follows: The law still tolerates corporal punishment in the schoolroom. The authorities are all that way, and the public has not thought proper to change. The public seems to cling to a system in the government of schools as has been discarded everywhere else. For such training be congenial to our nature, and favorable to the full development of the future man, is worthy of serious consideration, though not for us to

discuss. In one respect the tendency of the rod is so evidently evil, that it might, perhaps, be arrested on the ground of public policy. The practice has an inherent proneness to abuse. The very act of whipping engenders passion, and very generally leads to excess. Where one or two stripes only were intended, several usually follow, each increasing in vigor as the act of striking inflames the passions. This is a matter of daily observation and experience. Hence the spirit of the law is, and the leaning of the courts should be, to discountenance a practice which tends to excite human passions to heated and excessive action, ending in abuse and breaches of the peace. Such a system of petty tyranny cannot be watched too cautiously, nor guarded too strictly. The tender age of the sufferers forbids that its slightest abuse should be tolerated. So long as the power to punish corporeally in schools exists, it needs to be put under wholesome restrictions. Teachers should, therefore, understand that whenever correction is administered in anger or insolence, or in any other manner than in moderation and kindness, accompanied with that affectionate moral suasion so eminently due from one placed by the law "*in loco parentis*"—in the sacred relation of parent—the court must consider them guilty of assault and battery, the more aggravated and wanton in proportion to the tender years and dependent position of

the pupil. It can hardly be doubted but that public opinion will, in time, strike the ferule from the hands of the teacher, leaving him as the true basis of government, only the resources of his intellect and heart. Such is the only policy worthy of the State, and of her otherwise enlightened and liberal institutions. It is the policy of progress. The husband can no longer moderately chastise his wife; nor, according to the more recent authorities, the master his servant or apprentice. Even the degrading cruelties of the naval service have been arrested. Why the person of the school-boy, "with his shining morning face," should be less sacred in the eye of the law than that of the apprentice or sailor, is not easily explained. It is regretted that such are the authorities—still courts are bound by them. All that can be done, without the aid of legislation, is to hold every case strictly within the rule; and if the correction be in anger, or in any other respect immoderately or improperly administered, to hold the unworthy perpetrator guilty of assault and battery. The law having elevated the teacher to the place of the parent, if he is still to sustain that sacred relation, "it becomes him to be careful in the exercise of his authority, and not make his power a pretext for cruelty and oppression. (14 *Johns. R.*, 119.) Whenever he undertakes to exercise it, *the cause* must be sufficient; *the instrument* suitable to the purpose; *the manner and extent* of the correction, *the part of the person* to which it is applied, *the temper* in which it is inflicted—all should be distinguished with the kindness, prudence, and propriety which become the station. (*Cooper v. McJunkin*, 4 *Indiana R.*, 290.) This court has more sympathy for roguish youths, and less for hypocritical teachers than any other, we believe, in the land. To our mind the reason why the law gives the teacher the right to punish is very clear and easily explained, but it does not seem to be so to this court.

3. *The teacher to have the benefit of any reasonable doubt.*—The Supreme Court of Vermont recently gave a very able opinion on this subject, from which we extract the following: A schoolmaster has the

right to inflict reasonable corporeal punishment. He must exercise reasonable judgment and discretion in determining when to punish and to what extent. In determining upon what is a reasonable punishment, various considerations must be regarded—the nature of the offense, the apparent motive and disposition of the offender, the influence of his example and conduct upon others, and the sex, age, size, and strength of the pupil to be punished. Among reasonable persons much difference prevails as to the circumstances which will justify the infliction of punishment, and the extent to which it may properly be administered. On account of this difference of opinion and the difficulty which exists in determining what is a reasonable punishment, and the advantage which the master has by being on the spot to know all the circumstances, the manner, look, tone, gestures of the offender (which are not always easily described), and thus to form a correct opinion as to the necessity and extent of the punishment, considerable allowance should be made to the teacher by way of protecting him in the exercise of his discretion. Especially should he have this indulgence when he appears to have acted from good motives, and not from anger or malice. Hence the teacher is not to be held liable on the ground of excess of punishment, unless the punishment is *clearly* excessive, and would be held so in the general judgment of reasonable men. If the punishment be thus clearly excessive, then the master should be held liable for such excess, though he acted from good motives in inflicting the punishment, and, in his own judgment, considered it necessary and not excessive. But if there is any reasonable doubt whether the punishment was excessive, the master should have the benefit of that doubt. (*Lander v. Seaver*, 32 *Vermont R.*, 128; 19 *Id.*, 108; 4 *Gray*, 87; 2 *Dever. and Bat.*, 865; 8 *Salk*, 47; *Rome's Domestic Rel.*, 374, 375; *Wharton's Amer. Crim. Law*, 1,259; and 1 *Sanders on Pl. and Ev.*, 144.)

4. The Supreme Judicial Court of Massachusetts are of the opinion that *a ferule is a proper instrument of punishment*. In the case in which this decision was re-

there was evidence that the pupil had a proper rule of school, which was published by the defendant to read in her presence. The defendant produced evidence to show that the teacher was obstinate, told falsehoods, and insolent before and during the time of the trial; and alleged that it was for these faults that he inflicted the punishment.

There was also evidence tending to show that the punishment was not very severe till after the pupil had replied to the teacher with insolent words and manner; and that the teacher proved that the defendant ceased punishing when the pupil acknowledged his fault, asked forgiveness, and promised to behave better. The defendant asked the judge to instruct the jury "that a teacher is amenable to the laws, in a civil prosecution for punishing a scholar; only when he acts *malo animo*, with indictive feelings, or under the impulses of passion or malevolence; he is not liable for errors of opinion or mistakes of judgment merely, provided he is governed by an honest purpose of promoting, by the discipline of the school, the highest welfare of the scholar, and the best interests of the community; that he is liable in a criminal prosecution, for punishing a scholar, only for the amount of punishment inflicted more than adequate to subdue the scholar and secure obedience to the rules of the school." The judge did not instruct the jury as requested, but instructed them that a teacher had a right to inflict corporal punishment upon a scholar; that the instrument used (a ferule) was a proper one; that, in inflicting corporeal punishment, a teacher must exercise reasonable judgment and discretion, and must be governed, as to the mode and severity of punishment, by the nature of the offense, and by the age, size, and apparent strength of endurance of the pupil; that the question in this case was whether the punishment was excessive and improper; that if they should find the punishment to have been reasonable and proper, the defendant could not be deemed guilty of an assault and battery; but if,

upon all the evidence in the case, they should find the punishment to have been improper and excessive, the defendant should be found guilty." The jury returned a verdict of guilty, and exceptions having been taken by the defendant to the foregoing charge of the judge, the case was afterwards argued before the appellate court, where the charge of the judge was declared to be correct. (*Commonwealth v. Randall*, 4 Gray, 37.)

5. *A lady teacher in trouble.*—This was an indictment for assault and battery. The defendant, Rachel Pendergrass, kept a school for small children, and punished one of them with a rod to such an extent as to leave marks, all of which were such as were likely to pass away in a short time and leave no permanent injury. The judge instructed the jury that if they believed that the child (six or seven years of age), had been whipped by the defendant at that tender age, with either a switch or other instrument, so as to produce the marks described to them, the defendant was guilty. The jury under this charge returned a verdict of guilty; but Rachel took exceptions to the charge, and the case was afterwards argued in the higher court, in which the following opinion was delivered for that gallant court by Judge Gaston: It is not easy to state with precision the power which the law grants to schoolmasters and teachers, with respect to the correction of their pupils. It is analogous to that which belongs to parents, and the authority of the teacher is regarded as a delegation of parental authority. One of the most sacred duties of parents, is to train up and qualify their children for becoming useful and virtuous members of society; this duty cannot be effectually performed without the ability to command obedience, to control stubbornness, to quicken diligence, and to reform bad habits; and to enable him to exercise this salutary sway, he is armed with the power to administer moderate correction when he shall believe it to be just and necessary. The teacher is the substitute of the parent; is charged in part with the performance of his duties and in the exercise of these delegated duties is invested with his power. The law has not under-

taken to prescribe stated punishments for particular offenses, but has contented itself with the general grant of the power of moderate correction, and has confided the graduation of punishments, within the limits of this grant, to the discretion of the teacher. The line which separates moderate correction from immoderate punishment can only be ascertained by reference to general principles. The welfare of the child is the main purpose for which punishment is permitted to be inflicted. Any punishment, therefore, which may seriously endanger life, limbs, or health, or shall disfigure the child, or cause any other permanent injury, may be pronounced in itself immoderate, as not only being unnecessary for, but inconsistent with, the purpose for which correction is authorized. But any correction, however severe, which produces temporary pain only, and no permanent ill, cannot be so pronounced, since it may have been necessary for the reformation of the child, and does not injuriously affect its future welfare. We hold, therefore, that it may be laid down as a general rule, that teachers exceed the limits of their authority when they cause lasting mischief; but act within the limits of it, when they inflict temporary pain. When the correction administered is not in itself immoderate, and, therefore, beyond the authority of the teacher, its legality or illegality must depend entirely, we think, on the *qui animo* with which it was administered. Within the sphere of his authority, the master is the judge when correction is required, and of the degree of correction necessary; and like all others intrusted with a discretion, he cannot be made penally responsible for error of judgment, but only for wickedness of purpose. The best and the wisest of mortals are weak and erring creatures, and in the exercise of functions, in which their judgment is to be the guide, cannot be rightfully required to engage for more than honesty of purpose, and diligence of exertion. His judgment must be *presumed* correct, because he is the judge, and also because of the difficulty of proving the offense, or accumulation of offenses, that called for correction; of showing the peculiar temperament, disposition, and

habits of the individual corrected; and of exhibiting the various milder means that may have been ineffectually used before correction was resorted to. But the master may be punished when he does not transcend the powers granted, if he grossly abuse them. If he use his authority as a cover for malice, and under pretense of administering correction gratify his own bad passions, the mask of the judge shall be taken off, and he shall stand amenable to justice, as an individual not invested with judicial power. We believe that these are the rules applicable to the decision of the case before us. If they be, there was error in the instruction given to the jury, that if the child was whipped by the defendant so as to occasion the marks described by the prosecutor, the defendant had exceeded her authority and was guilty as charged. The marks were all temporary, and in a short time all disappeared. No permanent injury was done to the child. The only appearances that could warrant the belief or suspicion that the correction *threatened* permanent injury, were the bruises on the neck and the arms; and these, to say the least, were too equivocal to justify the court in assuming that they did threaten such mischief. We think that the instruction on this point should have been, that unless the jury could clearly infer from the evidence, that the correction inflicted had produced, or was in its nature calculated to produce, lasting injury to the child, it did not exceed the limits of the power which had been granted to the defendant. We think also, that the jury should have been further instructed, that however severe the pain inflicted, and however, in their judgment, it might seem disproportionate to the alleged negligence or offense of so young and tender a child, yet if it did not produce or threaten lasting mischief, it was their duty to acquit the defendant; unless the facts testified induced a conviction in their minds that the defendant did not act honestly in the performance of duty, according to her sense of right, but under the pretext of duty was gratifying malice. We think that rules less liberal toward teachers can not be laid down without breaking in upon the authority necessary

serving discipline, and commanding, and that although these rules leave their power to commit acts of indeverity with legal impunity, these actions will probably find their check in parental affection and in opinion; and if they should not, they must be tolerated as a part of imperfections and inconveniences no human laws can wholly remove. (*The State v. Pendergrass*, 2 *and Bat. R.*, 385.)

It is undoubtedly true that in order to an indictment for assault and battery is necessary to show that it was done *ex intentione*, and that if the intent is wanting, the offence is made out. But this intent is always inferred from the unlawful act. The unlawful and excessive use of force on

the person of another being proved, the wrongful intent is a necessary and legitimate conclusion in all cases where the act was designedly committed. It then becomes an assault and battery, because purposely inflicted without justification or excuse. Whether, under all the facts, the punishment of the pupil is excessive must be left to the jury to decide. (*Commonwealth v. Randall*, 4 *Gray*, 88.)

7. Whether the instrument used by the teacher, for the punishment of a pupil, was a proper one, is for the jury to decide, in consideration of all the circumstances of the case. Evidence that the same kind of instrument was used in other schools in the vicinity will rebut the charge of malice, by showing that the teacher did not resort to an unusual instrument. (*Lander v. Seaver*, 32 *Vermont R.*, 125.)

EARLY THEORIES CONCERNING THE EARTH.

At the most ancient times, the energies of philosophers have been directed on investigations of the geography and astronomy of our globe. Men of every character, varying from superficiality to the most profound reasoner, have been offered to account for its phenomena. To these speculations especially is attached, not only because of its relation to pure science, but also because they illustrate the gradual development of the human mind. In the earlier theories were mere fanciful conceptions. Hypotheses, offered for the explanation of natural occurrences, were supported only by dogmatic assertion, or abstruse metaphysical reasoning. Careful distinction into facts, and searching investigation of causes were unknown. But we pass from the mythological story which upheld the heavens, to the discovery of gravitation by Newton, that, in later days, mere theories, arising of an untutored and unre-

strained imagination, are no longer received, and that metaphysics are no longer employed to breed confusion in natural science. We are struck, too, by the complete emancipation from that ancient religious bondage, or rather intolerance, which fettered science, by denouncing as atheists and threatening with loss of life all those whose abler intellects shook off the trammels which bound their contemporaries. With the perfecting of mechanical ingenuity and the increased knowledge of mathematics, together with the greater opportunity and desire for investigation, scientific determinations have become more exact; and now, by the term theory we no longer understand a fanciful conception, but rather the inference deduced from an accurate comparison of facts obtained by careful research. Instead of the besotted superstition which once prevailed, exercising its pernicious influence upon every action of the mind, we find an almost universal incredulity, which readily

rejects every scientific hypothesis not fully borne out by facts.

As appears from what has been said, these theories form one of the most interesting chapters in the history of the human intellect. A brief review of them therefore can not fail to be interesting and instructive. We shall briefly examine the more prominent theories which have been advanced respecting the geography, astronomy, and cosmogony of our planet.

EARLY GEOGRAPHY.

The earliest system of geography on record is found in the writings of Homer. That author regarded the earth as a flat oval body of very limited extent, surrounded on all sides by a mighty river, called Ocean. This system was universally received until Thales, about six centuries before Christ, asserted that the earth was a sphere. This view was adopted by the Pythagoreans, but, being unsupported by observations, was accepted by very few, and was soon forgotten. Plato afterwards taught that the world was composed of twelve pentagons, while Anaximander maintained that the form was that of a cylinder. At length, as commerce extended, the spherical form of the earth was demonstrated, and has been accepted without cavil since the first century of the Christian era. Perhaps the most extravagant reverie ever presented, concerning the earth's form, was that of Captain Symmes, who some forty years ago advanced the theory that the earth is a hollow sphere, whose interior is inhabitable or at least accessible by openings at the poles. This enthusiastic officer actually sought opportunity to explore the polar regions to test the truth of his hypothesis, which was called the "American theory."

At a very early period attempts were made to ascertain the circumference of the earth. Aristotle says that, in his time, it was believed to be 400,000 stadia. Eratosthenes' calculations gave only 250,000 stadia (probably about 31,500 Roman miles, for we are uncertain as to the length of the stadium used); while another observer could only obtain 240,000,—and this result was reduced, by subsequent calculations,

to 180,000 stadia. The first results approaching accuracy were obtained by Snellius, a Hollander, who in 1615 measured off an arc of a meridian by triangulation, and so gained an approximate result. Maupertius afterwards used the same method of measurement, and calculated as the distance 25,000 miles, which varies very slightly from the length of a meridian as now determined.

Among the ancient Greeks geographical knowledge was very limited. According to their system, the earth terminated on the north by the imaginary Rhipsean mountains, inhabited by the Gorgons; on the west by the Pillars of Hercules, or Straits of Gibraltar; on the south by Ethiopia; and on the east by the Euxine or Black Sea. Beyond these limits flowed the mighty river Ocean. At the extreme north, or "Thule," there dwelt, in darkness, the Cimmerians, a fabulous race; while underneath, in the cavern of Tartarus, the Titans, foes to the gods, lived in a never-ending night.

The earliest recorded attempt at enlarging geographical knowledge was made by Pharaoh Necho, king of Egypt, who, about 600 B. C., dispatched an expedition down the Red Sea for this purpose. The fleet sailed around Africa, and coming northerly reached the Pillars of Hercules, through which it returned to Egypt by the Mediterranean. Herodotus doubted the history of this expedition, from the fact that, during a portion of the voyage, the sun was at the south, while again it was at the north of the explorers. This observation, however, when examined by the light of modern discoveries, affords the strongest possible proof that the expedition actually sailed in those regions. In the fifth century B. C. Hanno sailed from Carthage, and explored the whole coast of Europe as far north as Britain; and afterwards the conquests of Alexander extended the boundaries of the known earth toward the east.

It was not until within two centuries B. C. that any attempt was made to found a scientific system of geography. About that time Eratosthenes, a Grecian philosopher, offered his celebrated theory. He conceived a line, nine thousand miles long,

drawn east and west through those places whose longest day was fourteen and one-half hours, which was crossed perpendicularly by another line, five thousand miles long, running north and south. The extremities of these lines marked the limits of a belt, five thousand by nine thousand miles, which included all the inhabitable portions of the globe. Beyond these limits was an impassable ocean of unknown extent, but which, the shrewd speculator conceded, might possibly contain some islands or continents. About one hundred years later, Strabo wrote his renowned geography, a work which has been justly admired in all ages for its purity and elegance of style. While this author adopted many of the views of Eratosthenes, he far excelled that writer in accuracy of description. His work, however, was reliable only concerning the coasts about the Mediterranean, as it contains many erroneous statements concerning Africa and Western Europe.

THE FIRST MAPS.

The honor of producing the first map was reserved for Hipparchus, the astronomer, who lived about a century and a half B. C. He was the first who applied lines of latitude and longitude to the marking out of relative distances. Ptolemy, who lived about 120 A. D. and was distinguished alike as geographer and astronomer, produced a work on geography, which though in many respects exaggerated, was far superior to any of its predecessors. This work, and the map which accompanied it, were, in the main, accepted as perfectly reliable until the beginning of the sixteenth century, when several important errors in latitude were discovered, which rendered a thorough correction of the map necessary.

PROGRESS OF DISCOVERIES.

Little progress was made in geographical science for nearly fourteen centuries. Few discoveries were made; only Iceland, the Azores, and the Canaries on the west, and equally insignificant lands on the east, had been added to the map. True, the hardy voyagers of the north had explored the coasts of America as far south as Long

Island, and had established colonies in Greenland and New England; but before the end of the eleventh century the colonies had perished, and, by the time of Columbus, had entirely passed from the minds of men. Africa was yet, as indeed until within one hundred years of our own time, a true *terra incognita*. The most extravagant and fabulous reports prevailed concerning its inhabitants. Men and animals of gigantic size and shadowy form peopled its vast deserts, while monsters of hideous deformity existed in its southern borders.

Towards the close of the fifteenth century the travels of Marco Polo in the East attracted attention, and drew men once more to the consideration of geographical questions. About this time, strange timbers floated from the west upon the Azores, and the bodies of two men, from the same direction, drifted about in the currents until they were thrown upon the Canary shores. Men were already eagerly seeking some shorter passage to the Indies than the tedious route which doubled the Cape of Good Hope. Convinced of the sphericity of the earth, and influenced by the occurrences just mentioned, Columbus, the great admiral, concluded that, by sailing westwardly, he could reach the Indies in a much shorter time than by any other route. His efforts were crowned with success, and his discovery of the Western Continent opened the only way by which we could attain to a true system of geography.

Since the discovery of America geographical science has advanced with great rapidity. We are no longer compelled to theorize concerning unknown countries, and our maps are no longer disfigured by yellow blanks, marked "unexplored regions," for all have been in a measure described. Those problems of the ancients, the sources of the Nile and Niger, have been solved by the intrepid explorers of this century. Ethiopia has been as thoroughly explored by Livingston, Burton, and Barth, as China or India by others; the islands of the Pacific and even the lands about the poles have been marked out and named. Maps are now in every house, and the child of twelve years knows more of our globe than

did the wisest philosopher of Greece or Rome in the days of our Saviour or at the fall of the Roman empire.

THE EARLY ASTRONOMY OF THE EARTH.

The most primitive system of astronomy was that of appearances, which placed the earth in the centre of the universe, and regarded all the other heavenly bodies as revolving about it once in twenty-four hours. This was the system maintained by the ancient Egyptians and Chaldeans, and afterwards modified by Ptolemy. The first theory on record differing essentially from this was that of Pythagoras, who, in all probability, received it from the Egyptian priests during his travels through their country.* This philosopher held that, as the sun was fire, and therefore the most dignified object in the universe, it occupies the center, and the earth revolves about it once in a year. Diogenes Laertius says that Philolaus, a disciple of Pythagoras, endeavored to explain the apparent revolution of the heavenly bodies, by assuming a diurnal rotation of the earth. This hypothesis throughout resembled very much that of Copernicus, propounded nearly twenty centuries later, but was encumbered with so great a mass of rubbish, and was so repugnant to the received views, that, being supported by no natural authority, it soon passed from the memory of men. So soon indeed, that in a work recounting the varied astronomical theories previously given, published about the beginning of our era, no mention is made of that of the Pythagoreans, although the doctrines of that school had been fully set forth by Aristarchus only two centuries and a half before.

The next theory which claims our attention is the Ptolemaic; so termed from its author, Claudius Ptolemæus, a Roman geographer and astronomer, who lived under the emperors Adrian and Antoninus. This speculator believed that the earth is

in the center of the universe, and that around it the heavenly bodies moved in the following order of distance—the moon, Venus, sun, Mars, Jupiter, Saturn, and the fixed stars; above these are two spheres forming the crystalline heavens; beyond these is the *primum mobile*, which in some mysterious manner revolves once in twenty-four hours, and carries with it the heavenly bodies. Outside of all, and surrounding them, was the *cælum empyreum*, or abode of spirits. This theory was apparently so simple, and so perfectly in accordance with natural appearances, that, notwithstanding the many inconsistencies and even gross contradictions in the system, it retained ascendancy over all others for upwards of fourteen centuries.

During this long period investigations were continued. Discoveries of peculiar planetary motions were made, many of them exceedingly difficult of explanation by the Ptolemaic theory. Additions to it were constantly made, until at length the system became so excessively cumbrous and complicated that a conceited king of Spain once remarked, "Had I been of God's council when he made the heavens, I could have taught him how to mend his work." About the end of the fifteenth century, Nicholaus Copernicus, a Polish canon, becoming convinced of the incompetency of the accepted system, began anew the investigation of the heavenly bodies. Nineteen years of intense labor resulted in that greatest and complete system which bears his name, and, with few changes, is now received throughout the civilized world.

This system, as now maintained, makes the sun the center around which the planets revolve, in set periods, in elliptical orbits, attended by the satellites, which in turn revolve about their primaries. Copernicus did not live to complete his labor. He was so opposed and hampered by the bigoted prelates of his age, that his great work, "*De Orbitus Celestium*," was suppressed, and he received the first copy of it only on his death-bed.

(To be continued.)

* Mr. Lewes doubts this, but the presumptive evidence is so strong that we accept it.—*Editor.*

FRENCH NOVELTIES IN EDUCATION.

TRICOTIC educationist, in an address to "la belle France," suggests beside every town-hall throughout France, there should be tables exhibiting names of famous kings, poets, and inscriptions of the most notable events that have happened in the neighborhood. He would turn the railway stations and waiting-rooms, covering them with the names of the largest towns, the principal monuments, and the most famous in the vicinity; and with indications revealing industry of the district, racial character, and the like. He thought that the "odds and ends of time," piled in front of the town-hall, and railway stations and waiting-rooms, must be turned to account; and, by so doing, urges a consideration of the things around the large colored railway stations fixed to the walls of some railway station there is generally a group of students imposed, for the most part, of Frenchmen.

He would be glad to believe that something of the kind might be undertaken on the City Hall barracks, and Court-house fence, and the ferry-boat metropolis, we were to substitute of Niagara Falls, and statistics of construction of Suspension Bridge, in glaring notices of Plantation Bitters cabalistic S. T.—1860—X., there would certainly have no disastrous result. Young America, and might possibly some beneficial result in an esthetic view. Our parks and thoroughfares, doubtless, be no less advanced to our fashionable belles, if they are occasionally forced to read a practical statement, or acquire some natural history, instead of being only reminded of the questionable use of "ambrosial" balsams, and command to undergo an interminable orthographic discipline, in the necessity of a spelling of "Sozodont" and on.

Other gentlemen, petitioning the State to make less feasible proposals. One

of them, impatient to see all the provincial *patois* die before himself, prays the Senate to require that no teacher shall allow a pupil to utter a word that is not French, and that only French expressions shall be allowed in catechisms, sermons, and town-council discussions. Another memorialist prays the Senate to order the publication of a "popular library," which all citizens shall be obliged to purchase, the plan being to present every citizen with one volume annually, and to add the cost of the volume to the poll-tax. The third memorialist, having noticed the rapidity with which children, after leaving school, lose whatever facility of reading they may have acquired there, prays that the government would establish, at its own expense, a small weekly or monthly journal, to be distributed among the young who no longer attend school. These ideas seem to be a little in advance of even French progress. On all of the memorials the Senate passed to the order of the day.

Among the practical innovations is the introduction of sewing-machines in the schoolroom. An appropriation has been made for the purchase of four sewing-machines, one of which is to be placed in the Douai Female Normal School, the others in the parochial schools of Lille, Valenciennes, and Dunkirk. In New York and other cities, where the newspapers teem with propositions to teach the theory and practice of the sewing-machine, and schools are established promising to graduate "perfect operators for only one dollar," there is no necessity for the adoption of this French novelty. But it may be that this would be a desirable feature in some suburban and especially in rural schools, if for no other purpose than to impress upon the popular mind the advantages of the great domestic labor-saving machine. The harp—beautiful in its poetical associations, but useless and insignificant in its application, in this piano-playing age—is taught even in backwoods seminaries; surely a cabinet-case sewing-machine is as interesting as a work of art, and the plainest one far more

formed in the every-day business of life. Other training is needed here in connection with the mathematical. The study of language will partly supply the deficiency. But I know of no study which will do so much in this respect as the study of natural science, for this introduces the mind to a wide observation of various facts. It is the grappling with facts that not only gives to mental action an eminently practical character, but liberalizes and elevates it by the wide range of phenomena open to us in nature.

Much of the reasoning used in natural science and on ordinary subjects, it should be observed, is not strictly mathematical. Mathematical reasoning has to do with few points, and is, in a certain sense, simple. But many of the reasonings in natural science take in a large range of points, some of them often mere analogies, and are therefore very complex in their character. The same can be said of the reasonings upon which much of human action is based in business, politics, etc. If the strictness, not to say narrowness, of mathematical reasoning were to be applied in such cases, much of what we now consider settled must be marked as not proven, and doubt and uncertainty must everywhere be introduced.

It is what are called the observing powers that are most prominently cultivated in the study of natural science. And here let it be distinctly understood what I mean by observation. I do not mean the bare collection of facts through the action of the senses. Observation implies thought guiding the collection of the facts and making out their relations. It therefore implies reasoning in connection with the action of the senses. A good observer is a good reasoner, and is not a mere fact-hunter. Premising this, I remark that one of the chief aims of education should be to cultivate this observation. This is the basis of success in life—a true success. It is what makes the *well-informed* man, and fits him for the varied exigencies that may arise in his course.

One means of cultivating this observation is found in the study of natural science, for it supplies from earth, air, and water an abundance of facts to call forth

the action of the observing powers. But to secure the result, the study must be pursued aright. The chief object of instruction should not be, as it often is, to load the memory with the technicalities and hard names of science. The teaching of facts and simple fundamental principles should be the prominent object throughout, while the technicalities and terminology should be kept in the background, should not be introduced at all at the outset, and should be brought out gradually, even cautiously, as the pupil advances in his course of instruction. As an illustration of the wrong way of teaching natural science I would mention the common mode of teaching botany. The classification of plants is made the chief thing, while the interesting facts and principles of vegetable physiology, which should constitute the body of the study, are very much left out of view.

Adopting the plan thus indicated, natural science can be taught throughout the whole course of education, beginning with the child as soon as he learns to read; for there are phenomena all around us which can be made intensely interesting to the child; and the teaching of these facts, accompanied with such explanations as he can comprehend, is really teaching the beginnings of science. Much of what is called object-teaching can be made to assume this form.

Important as it is that the observing powers should be cultivated, not only is there a failure to do it in education, as it is commonly pursued, but the action of these powers is actually repressed, especially in the earlier part of the course. The child is alive to see all that is around him, and is full of inquiries about the phenomena that he witnesses. He is an observer, or in other words, a young philosopher. He is in an attitude of mind to learn a great deal, and will do so if he be taught aright. But subjected to the drudgery of rote-learning in the schoolroom, and practically given to understand that observation is no part of education, but that learning consists in spelling, reading, committing to memory words and forms of expression, and ciphering, he gradually gives up what the teacher would call his troublesome

tiveness. This unnatural course has its influence, that it is a general fact children are not as good observers at five years of age, as they are at eight or ten.

A discussion of these points would make this article too long. In conclusion, we have stated, that there are indications of a change in the general plan of education, and to the setting aside of the humdrum

drudgery of rote-learning, and the introduction of the study of things in place of the mere memorizing of words and forms. This is the grand reform that is needed, and we never shall realize fully what education is, until natural science is put on a level with the study of language and of mathematics, and, like them, is taught in proper gradations, from the outset of education throughout its whole course.

PEDAGOGICAL LAW.

II.

AT teachers may understand the general feeling, as well as the law, on an important subject of corporeal punishment we will cite the opinions of the State using in every instance the identical language in which they were delivered.

When the Hon. John A. Dix was Superintendent of Schools for the State of New York, he gave the following as his opinion: The practice of inflicting *corporeal punishment* upon scholars, *in any case whatever*, has no sanction but usage. The teacher is responsible for maintaining order, and he must be the judge of the degree and nature of the punishment administered when his authority is set at defiance.

At the same time he is liable to injury for any abuse of a power which is wholly derived from custom. (*Supt. Common Schools Decisions*,

The authorities all one way.—The Supreme Court of Indiana expresses its opinion as follows: The law still tolerates corporal punishment in the schoolroom. The authorities are all that way, and the State has not thought proper to interfere. The public seems to cling to a conservatism in the government of schools which has been discarded everywhere else. For such training be congenial to our institutions, and favorable to the full development of the future man, is worthy of serious consideration, though not for us to

discuss. In one respect the tendency of the rod is so evidently evil, that it might, perhaps, be arrested on the ground of public policy. The practice has an inherent proneness to abuse. The very act of whipping engenders passion, and very generally leads to excess. Where one or two stripes only were intended, several usually follow, each increasing in vigor as the act of striking inflames the passions. This is a matter of daily observation and experience. Hence the spirit of the law is, and the leaning of the courts should be, to discountenance a practice which tends to excite human passions to heated and excessive action, ending in abuse and breaches of the peace. Such a system of petty tyranny cannot be watched too cautiously, nor guarded too strictly. The tender age of the sufferers forbids that its slightest abuse should be tolerated. So long as the power to punish corporeally in schools exists, it needs to be put under wholesome restrictions. Teachers should, therefore, understand that whenever correction is administered in anger or insolence, or in any other manner than in moderation and kindness, accompanied with that affectionate moral suasion so eminently due from one placed by the law "*in loco parentis*"—in the sacred relation of parent—the court must consider them guilty of assault and battery, the more aggravated and wanton in proportion to the tender years and dependent position of

the pupil. It can hardly be doubted but that public opinion will, in time, strike the ferule from the hands of the teacher, leaving him as the true basis of government, only the resources of his intellect and heart. Such is the only policy worthy of the State, and of her otherwise enlightened and liberal institutions. It is the policy of progress. The husband can no longer moderately chastise his wife; nor, according to the more recent authorities, the master his servant or apprentice. Even the degrading cruelties of the naval service have been arrested. Why the person of the school-boy, "with his shining morning face," should be less sacred in the eye of the law than that of the apprentice or sailor, is not easily explained. It is regretted that such are the authorities—still courts are bound by them. All that can be done, without the aid of legislation, is to hold every case strictly within the rule; and if the correction be in anger, or in any other respect immoderately or improperly administered, to hold the unworthy perpetrator guilty of assault and battery. The law having elevated the teacher to the place of the parent, if he is still to sustain that sacred relation, "it becomes him to be careful in the exercise of his authority, and not make his power a pretext for cruelty and oppression. (14 *Johns. R.*, 119.) Whenever he undertakes to exercise it, *the cause* must be sufficient; *the instrument* suitable to the purpose; *the manner and extent* of the correction, *the part of the person* to which it is applied, *the temper* in which it is inflicted—all should be distinguished with the kindness, prudence, and propriety which become the station. (*Cooper v. McJunkin*, 4 *Indiana R.*, 290.) This court has more sympathy for roguish youths, and less for hectoring teachers than any other, we believe, in the land. To our mind the reason why the law gives the teacher the right to punish is very clear and easily explained, but it does not seem to be so to this court.

3. *The teacher to have the benefit of any reasonable doubt.*—The Supreme Court of Vermont recently gave a very able opinion on this subject, from which we extract the following: A schoolmaster has the

right to inflict reasonable corporeal punishment. He must exercise reasonable judgment and discretion in determining when to punish and to what extent. In determining upon what is a reasonable punishment, various considerations must be regarded—the nature of the offense, the apparent motive and disposition of the offender, the influence of his example and conduct upon others, and the sex, age, size, and strength of the pupil to be punished. Among reasonable persons much difference prevails as to the circumstances which will justify the infliction of punishment, and the extent to which it may properly be administered. On account of this difference of opinion and the difficulty which exists in determining what is a reasonable punishment, and the advantage which the master has by being on the spot to know all the circumstances, the manner, look, tone, gestures of the offender (which are not always easily described), and thus to form a correct opinion as to the necessity and extent of the punishment, considerable allowance should be made to the teacher by way of protecting him in the exercise of his discretion. Especially should he have this indulgence when he appears to have acted from good motives, and not from anger or malice. Hence the teacher is not to be held liable on the ground of excess of punishment, unless the punishment is *clearly* excessive, and would be held so in the general judgment of reasonable men. If the punishment be thus clearly excessive, then the master should be held liable for such excess, though he acted from good motives in inflicting the punishment, and, in his own judgment, considered it necessary and not excessive. But if there is any reasonable doubt whether the punishment was excessive, the master should have the benefit of that doubt. (*Lander v. Seaver*, 32 *Vermont R.*, 123; 19 *Ib.*, 108; 4 *Gray*, 37; 3 *Dever. and Bat.*, 865; 3 *Salk*, 47; *Ross' Domestic Rel.*, 374, 375; *Wharton's Amer. Crim. Law*, 1,259; and 1 *Sanders on Pl. and Ev.*, 144.)

4. The Supreme Judicial Court of Massachusetts are of the opinion that *a ferule is a proper instrument of punishment*. In the case in which this decision was ren-

there was evidence that the pupil obeyed a proper rule of school, which was published by the defendant to read in her presence. The defendant read evidence to show that the pupil was obstinate, told falsehoods, and was insolent before and during the time of the trial; and alleged that it was for these faults that he inflicted the punishment.

There was also evidence tending to show that the punishment was not very severe till after the pupil had replied to the teacher with insolent words and manner; and it was proved that the defendant ceased punishing when the pupil acknowledged his fault, asked forgiveness, and promised to behave better. The defendant asked the judge to instruct the jury "that a teacher is amenable to the laws, in a criminal prosecution for punishing a scholar, only when he acts *malo animo*, with vindictive feelings, or under the impulses of passion or malevolence; and is not liable for errors of opinion or mistakes of judgment merely, provided he is governed by an honest purpose of promoting, by the discipline of the school, the highest welfare of the scholar, and the best interests of the community; that he is liable in a criminal action, for punishing a scholar, only for the amount of punishment inflicted more than adequate to subdue the scholar and secure obedience to the rules of the school." The judge did not instruct the jury as requested, but instructed them that a teacher had a right to inflict corporal punishment upon a scholar; that the instrument used (a ferule) was a proper one; that, in inflicting corporeal punishment, a teacher must exercise reasonable judgment and discretion, and must be governed, as to the mode and severity of punishment, by the nature of the offense, and by the age, size, and apparent strength and endurance of the pupil; that the only question in this case was whether the punishment was excessive and improper; that if they should find the punishment to have been reasonable and proper, the defendant could not be deemed guilty of an assault and battery; but if,

upon all the evidence in the case, they should find the punishment to have been improper and excessive, the defendant should be found guilty." The jury returned a verdict of guilty, and exceptions having been taken by the defendant to the foregoing charge of the judge, the case was afterwards argued before the appellate court, where the charge of the judge was declared to be correct. (*Commonwealth v. Randall, 4 Gray, 37.*)

5. *A lady teacher in trouble.*—This was an indictment for assault and battery. The defendant, Rachel Pendergrass, kept a school for small children, and punished one of them with a rod to such an extent as to leave marks, all of which were such as were likely to pass away in a short time and leave no permanent injury. The judge instructed the jury that if they believed that the child (six or seven years of age), had been whipped by the defendant at that tender age, with either a switch or other instrument, so as to produce the marks described to them, the defendant was guilty. The jury under this charge returned a verdict of guilty; but Rachel took exceptions to the charge, and the case was afterwards argued in the higher court, in which the following opinion was delivered for that gallant court by Judge Gaston: It is not easy to state with precision the power which the law grants to schoolmasters and teachers, with respect to the correction of their pupils. It is analogous to that which belongs to parents, and the authority of the teacher is regarded as a delegation of parental authority. One of the most sacred duties of parents, is to train up and qualify their children for becoming useful and virtuous members of society; this duty cannot be effectually performed without the ability to command obedience, to control stubbornness, to quicken diligence, and to reform bad habits; and to enable him to exercise this salutary sway, he is armed with the power to administer moderate correction when he shall believe it to be just and necessary. The teacher is the substitute of the parent; is charged in part with the performance of his duties and in the exercise of these delegated duties is invested with his power. The law has not under-

the person of another being proved, the wrongful intent is a necessary and legitimate conclusion in all cases where the act was designedly committed. It then becomes an assault and battery, because purposely inflicted without justification or excuse. Whether, under all the facts, the punishment of the pupil is excessive must be left to the jury to decide. (*Commonwealth v. Randall*, 4 *Gray*, 88.)

7. Whether the instrument used by the teacher, for the punishment of a pupil, was a proper one, is for the jury to decide, in consideration of all the circumstances of the case. Evidence that the same kind of instrument was used in other schools in the vicinity will rebut the charge of malice, by showing that the teacher did not resort to an unusual instrument. (*Lander v. Seaver*, 32 *Vermont R.*, 125.)

QUESTIONS CONCERNING THE EARTH.

times, the have been the ge- our globe. ying from ad reason- nt for its as especial ecause of t also be- develop- he earlier d concep- the expla- were sup- on, or ab-

Careful g investi- wn. But gical story s, to the r Newton, theories, and unre- strained imagination, are no longer received, and that metaphysics are no longer employed to breed confusion in natural science. We are struck, too, by the complete emancipation from that ancient religious bondage, or rather intolerance, which fettered science, by denouncing as atheists and threatening with loss of life all those whose abler intellects shook off the trammels which bound their contemporaries. With the perfecting of mechanical ingenuity and the increased knowledge of mathematics, together with the greater opportunity and desire for investigation, scientific determinations have become more exact; and now, by the term theory we no longer understand a fanciful conception, but rather the influence deduced from an accurate comparison of facts obtained by careful research. Instead of the besotted superstition which once prevailed, exercising its pernicious influence upon every action of the mind, we find an almost universal incredulity, which readily

rejects every scientific hypothesis not fully borne out by facts.

As appears from what has been said, these theories form one of the most interesting chapters in the history of the human intellect. A brief review of them therefore can not fail to be interesting and instructive. We shall briefly examine the more prominent theories which have been advanced respecting the geography, astronomy, and cosmogony of our planet.

EARLY GEOGRAPHY.

The earliest system of geography on record is found in the writings of Homer. That author regarded the earth as a flat oval body of very limited extent, surrounded on all sides by a mighty river, called Ocean. This system was universally received until Thales, about six centuries before Christ, asserted that the earth was a sphere. This view was adopted by the Pythagoreans, but, being unsupported by observations, was accepted by very few, and was soon forgotten. Plato afterwards taught that the world was composed of twelve pentagons, while Anaximander maintained that the form was that of a cylinder. At length, as commerce extended, the spherical form of the earth was demonstrated, and has been accepted without cavil since the first century of the Christian era. Perhaps the most extravagant reverie ever presented, concerning the earth's form, was that of Captain Symmes, who some forty years ago advanced the theory that the earth is a hollow sphere, whose interior is inhabitable or at least accessible by openings at the poles. This enthusiastic officer actually sought opportunity to explore the polar regions to test the truth of his hypothesis, which was called the "American theory."

At a very early period attempts were made to ascertain the circumference of the earth. Aristotle says that, in his time, it was believed to be 400,000 stadia. Eratosthenes' calculations gave only 250,000 stadia (probably about 31,500 Roman miles, for we are uncertain as to the length of the stadium used); while another observer could only obtain 240,000,—and this result was reduced, by subsequent calculations,

to 180,000 stadia. The first results approaching accuracy were obtained by Snellius, a Hollander, who in 1615 measured off an arc of a meridian by triangulation, and so gained an approximate result. Maupertius afterwards used the same method of measurement, and calculated as the distance 25,000 miles, which varies very slightly from the length of a meridian as now determined.

Among the ancient Greeks geographical knowledge was very limited. According to their system, the earth terminated on the north by the imaginary Rhiphaean mountains, inhabited by the Gorgons; on the west by the Pillars of Hercules, or Straits of Gibraltar; on the south by Ethiopia; and on the east by the Euxine or Black Sea. Beyond these limits flowed the mighty river Ocean. At the extreme north, or "Thule," there dwelt, in darkness, the Cimmerians, a fabulous race; while underneath, in the cavern of Tartarus, the Titans, foes to the gods, lived in a never-ending night.

The earliest recorded attempt at enlarging geographical knowledge was made by Pharaoh Necho, king of Egypt, who, about 600 B. C., dispatched an expedition down the Red Sea for this purpose. The fleet sailed around Africa, and coming northerly reached the Pillars of Hercules, through which it returned to Egypt by the Mediterranean. Herodotus doubted the history of this expedition, from the fact that, during a portion of the voyage, the sun was at the south, while again it was at the north of the explorers. This observation, however, when examined by the light of modern discoveries, affords the strongest possible proof that the expedition actually sailed in those regions. In the fifth century B. C. Hanno sailed from Carthage, and explored the whole coast of Europe as far north as Britain; and afterwards the conquests of Alexander extended the boundaries of the known earth toward the east.

It was not until within two centuries B. C. that any attempt was made to found a scientific system of geography. About that time Eratosthenes, a Grecian philosopher, offered his celebrated theory. He conceived a line, nine thousand miles long,

st and west through those places nearest day was fourteen and one-half, which was crossed perpendicular line, five thousand miles north and south. The extent of these lines marked the limits five thousand by nine thousand which included all the inhabitable of the globe. Beyond these was an impassable ocean of unextant, but which, the shrewd or conceded, might possibly conceal islands or continents. About red years later, Strabo wrote his geography, a work which has long been admired in all ages for its elegance of style. While this adopted many of the views of Ptolemy, he far excelled that writer in every way of description. His work, though reliable only concerning the Mediterranean, as it contains many erroneous statements concerning Africa and Western Europe.

THE FIRST MAPS.

In honor of producing the first map was reserved for Hipparchus, the astronomer, who lived about a century and a half before Christ. He was the first who applied lines of latitude and longitude to the marking of relative distances. Ptolemy, who lived about 120 A. D. and was distinguished as a geographer and astronomer, produced a work on geography, which though in many respects exaggerated, was far more correct than any of its predecessors. This was the map which accompanied it, and which, the main, accepted as perfectly correct until the beginning of the sixteenth century, when several important errors in it were discovered, which rendered a general correction of the map neces-

PROGRESS OF DISCOVERIES.

In the progress was made in geographical knowledge during nearly fourteen centuries. Few maps were made; only Iceland, the Azores, and the Canaries on the west, and a few insignificant lands on the east, had been marked on the map. True, the hardy explorers of the north had explored the coast of America as far south as Long

Island, and had established colonies in Greenland and New England; but before the end of the eleventh century the colonies had perished, and, by the time of Columbus, had entirely passed from the minds of men. Africa was yet, as indeed until within one hundred years of our own time, a true *terra incognita*. The most extravagant and fabulous reports prevailed concerning its inhabitants. Men and animals of gigantic size and shadowy form peopled its vast deserts, while monsters of hideous deformity existed in its southern borders.

Towards the close of the fifteenth century the travels of Marco Polo in the East attracted attention, and drew men once more to the consideration of geographical questions. About this time, strange timbers floated from the west upon the Azores, and the bodies of two men, from the same direction, drifted about in the currents until they were thrown upon the Canary shores. Men were already eagerly seeking some shorter passage to the Indies than the tedious route which doubled the Cape of Good Hope. Convinced of the sphericity of the earth, and influenced by the occurrences just mentioned, Columbus, the great admiral, concluded that, by sailing westwardly, he could reach the Indies in a much shorter time than by any other route. His efforts were crowned with success, and his discovery of the Western Continent opened the only way by which we could attain to a true system of geography.

Since the discovery of America geographical science has advanced with great rapidity. We are no longer compelled to theorize concerning unknown countries, and our maps are no longer disfigured by yellow blanks, marked "unexplored regions," for all have been in a measure described. Those problems of the ancients, the sources of the Nile and Niger, have been solved by the intrepid explorers of this century. Ethiopia has been as thoroughly explored by Livingston, Burton, and Barth, as China or India by others; the islands of the Pacific and even the lands about the poles have been marked out and named. Maps are now in every house, and the child of twelve years knows more of our globe than

rated you too low, and others too high, they alone are to blame—not the clergy, the Superior Court, the Government Council, or the Board of Education. Nevertheless there is good fortune in store for you yet. A time will come when presents will be showered upon you, like manna in the desert. Coming home, your knapsack will be always full, and you will be able to feed your children like young ravens in the brook. Many a joy you will possess. You will be extolled over mountain and valley; ladders will be placed against your chimney, and hams and sausages will abound in your kitchen; all your miseries will be at an end. Therefore be of good cheer, and eat a slice of my cake, and drink a glass of my brandy, instead of signing envious petitions."

Meantime the schoolmaster, who had struck a light, lit his pipe, and found the pens and ink. Advancing toward me, he presented the petition for my signature, just as the other handed me a glass of his brandy; and there I lay, doubtful which to accept.

I wavered between the two like a reed in the blast. I could not well refuse to sign the petition of the little schoolmaster, for, small as he was, I feared him. Yet I was reluctant to append my signature; for I knew that the little man might, in the end, have himself and all concerned with him hung, particularly if the parties he was petitioning against remained masters. Then the apple-brandy and the cake were inviting. What could I do? Flesh and blood inclined me to yield to the eating and drinking—yet I hesitated.

The two tempters had drawn nearer and nearer, the schoolmaster stretching forth

the paper in one hand, and holding his pipe with the other; whilst his opponent, holding the glass and the cake, pressed his bottle to his breast. Adopting a middle course, I held my hand tremblingly for the paper, and shoved my mouth toward the brandy. This brought the two into contact, they touched each other, started back and stared at each other, as if doubtful how to act. Advancing again toward me, the little one wielded his pipe as a shield against the foe, and the other prudently covered himself with his bottle.

Not wishing to offend either, I continued passive. They, seeing that I was not likely to decide the contest, entered into a desperate struggle. I felt the paper thrust into my hand by the one, and the fiery fluid poured down my throat by the other. The pipe and the bottle were smashed in the conflict; both the combatants, falling upon my body, weighed me down, as if rock were resting on my breast. In the rage, the one thrust some of the cake in my mouth, and the other did the same with his petition. Being thus nearly choked, my senses left me.

I awoke, bathed in perspiration. My wife, finding me trembling and moaning, had roused me. My body seemed bruised all over, and it being morning, I got up but was even more dejected than on the evening before.

Seeing my mental depression, it occurred to my good wife to send me to the residence of a friend, that he might cheer me. This learned and eccentric friend whom I visited, persuaded me to write the chapters which will follow. I trust they will interest and profit my fellow teachers in America.

MEANS OF MENTAL DEVELOPMENT.

A CONTRIBUTOR in a late number of the MONTHLY said, "Human intelligence may be developed by two methods—by classical learning, and the mathematical studies; good educational instruction re-

quires both." This proposition asserts that all mental culture comes from two branches alone. Other studies, the writer would perhaps grant, are very well for other purposes—as, for example, the study of natural

, history, etc.—but are nothing worth discipline and development of the powers.

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We advance another step. *Exercising the mind on some subjects develops the men- tal powers more than exercising it on other subjects*. The general rule on this point is, that the subject which awakens the most activity in the mind is the most valuable in this respect. Tried by this rule, natural science can not be put upon an inferior level. Every one will admit at once that its in- vestigations call forth quite as much men- tal effort as the study of language. How is it now as compared with mathematics? Are not some of its grand conclusions ca- pable of arousing the mind to as high and extended flights of thought as any of the greatest of mathematical solutions? In- deed, do not the mathematics derive their highest interest from their application to natural science, and thus show that the two are fitted to go hand in hand together in “developing human intelligence?”

We go a step still further. *In develop- ing the mind each branch of study has its peculiar province*. It is manifest to every one that the mind in the study of mathe- matics is brought into a state of action dif- ferent from that which occurs when it is studying language. The same is obvious in a comparison with the study of natural science. For a full and systematical de- velopment of mind, then, different branches of study are required. If any one be pur- sued to the exclusion of the rest, there will be an unsymmetrical, a distorted develop- ment. This is often seen in the influence of an undue prominence of mathematical study. This study serves to give definite- ness to mental action, but fails to secure that range of action which is required in most of the circumstances in which the mind is called to act in life. In other words, while it gives strength and clear- ness, pursued alone it shuts up to such strictness that it inevitably narrows the mind. This is often seen. A man may have the most thorough and extensive mathematical training, and from the pos- session of mathematical genius may arrive at great eminence; and yet he may be, in the ordinary sense of the term, a poor rea- soner—poor at making an argument—poor at arriving at such conclusions as must be

formed in the every-day business of life. Other training is needed here in connection with the mathematical. The study of language will partly supply the deficiency. But I know of no study which will do so much in this respect as the study of natural science, for this introduces the mind to a wide observation of various facts. It is the grappling with facts that not only gives to mental action an eminently practical character, but liberalizes and elevates it by the wide range of phenomena open to us in nature.

Much of the reasoning used in natural science and on ordinary subjects, it should be observed, is not strictly mathematical. Mathematical reasoning has to do with few points, and is, in a certain sense, simple. But many of the reasonings in natural science take in a large range of points, some of them often mere analogies, and are therefore very complex in their character. The same can be said of the reasonings upon which much of human action is based in business, politics, etc. If the strictness, not to say narrowness, of mathematical reasoning were to be applied in such cases, much of what we now consider settled must be marked as not proven, and doubt and uncertainty must everywhere be introduced.

It is what are called the observing powers that are most prominently cultivated in the study of natural science. And here let it be distinctly understood what I mean by observation. I do not mean the bare collection of facts through the action of the senses. Observation implies thought guiding the collection of the facts and making out their relations. It therefore implies reasoning in connection with the action of the senses. A good observer is a good reasoner, and is not a mere fact-hunter. Premising this, I remark that one of the chief aims of education should be to cultivate this observation. This is the basis of success in life—a true success. It is what makes the *well-informed* man, and fits him for the varied exigencies that may arise in his course.

One means of cultivating this observation is found in the study of natural science, for it supplies from earth, air, and water an abundance of facts to call forth

the action of the observing powers. But to secure the result, the study must be pursued aright. The chief object of instruction should not be, as it often is, to load the memory with the technicalities and hard names of science. The teaching of facts and simple fundamental principles should be the prominent object throughout, while the technicalities and terminologies should be kept in the background, and not be introduced at all at the outset, and should be brought out gradually, even cautiously, as the pupil advances in his course of instruction. As an illustration of the wrong way of teaching natural science I would mention the common mode of teaching botany. The classification of plants is made the chief thing, while the interesting facts and principles of vegetable physiology, which should constitute the body of the study, are very much left out of view.

Adopting the plan thus indicated, natural science can be taught throughout the whole course of education, beginning with the child as soon as he learns to read; for there are phenomena all around us which can be made intensely interesting to the child; and the teaching of these facts, accompanied with such explanations as he can comprehend, is really teaching the beginnings of science. Much of what is called object-teaching can be made to assume this form.

Important as it is that the observing powers should be cultivated, not only is there a failure to do it in education, as it is commonly pursued, but the action of these powers is actually repressed, especially in the earlier part of the course. The child is alive to see all that is around him, and is full of inquiries about the phenomena that he witnesses. He is an observer, or in other words, a young philosopher. He is in an attitude of mind to learn a great deal, and will do so if he be taught aright. But subjected to the drudgery of rote-learning in the schoolroom, and practically given to understand that observation is no part of education, but that learning consists in spelling, reading, committing to memory words and forms of expression, and ciphering, he gradually gives up what the teacher would call his troublesome

reness. This unnatural course has influence, that it is a general fact children are not as good observers at years of age, as they are at eight. Discussion of these points would make this article too long. In conclusion, it is stated, that there are indications of a change in the general plan of education, and the setting aside of the humdrum

drudgery of rote-learning, and the introduction of the study of things in place of the mere memorizing of words and forms. This is the grand reform that is needed, and we never shall realize fully what education is, until natural science is put on a level with the study of language and of mathematics, and, like them, is taught in proper gradations, from the outset of education throughout its whole course.

PEDAGOGICAL LAW.

II.

If teachers may understand the general feeling, as well as the law, on an important subject of corporeal punishment, we will cite the opinions of the judges, using in every instance the language in which they were delivered.

When the Hon. John A. Dix was President of Schools for the State of New York, he gave the following as his

The practice of inflicting *corporeal punishment* upon scholars, *in any case*, has no sanction but usage. The teacher is responsible for maintaining order, and he must be the judge of the effect and nature of the punishment when his authority is set at defiance. At the same time he is liable to be injured for any abuse of a power which is wholly derived from custom. *Common Schools Decisions*,

and authorities all one way.—The Supreme Court of Indiana expresses its opinion as follows: The law still tolerates corporal punishment in the schoolroom. Authorities are all that way, and the Supreme Court has not thought proper to change it. The public seems to cling to a system in the government of schools which has been discarded everywhere else. For such training be congenial to our notions, and favorable to the full development of the future man, is worthy of consideration, though not for us to

discuss. In one respect the tendency of the rod is so evidently evil, that it might, perhaps, be arrested on the ground of public policy. The practice has an inherent proneness to abuse. The very act of whipping engenders passion, and very generally leads to excess. Where one or two stripes only were intended, several usually follow, each increasing in vigor as the act of striking inflames the passions. This is a matter of daily observation and experience. Hence the spirit of the law is, and the leaning of the courts should be, to discountenance a practice which tends to excite human passions to heated and excessive action, ending in abuse and breaches of the peace. Such a system of petty tyranny cannot be watched too cautiously, nor guarded too strictly. The tender age of the sufferers forbids that its slightest abuse should be tolerated. So long as the power to punish corporeally in schools exists, it needs to be put under wholesome restrictions. Teachers should, therefore, understand that whenever correction is administered in anger or insolence, or in any other manner than in moderation and kindness, accompanied with that affectionate moral suasion so eminently due from one placed by the law "*in loco parentis*"—in the sacred relation of parent—the court must consider them guilty of assault and battery, the more aggravated and wanton in proportion to the tender years and dependent position of

grave tone, and the organist moreover played unusually slow. I could not for the life of me keep the time in *mol*, and sang the hymn of praise according to the tone of my own heart, high and quick, as the blood sped merrily through my veins.

The result was a singular medley, which caused a good deal of talk, there being doubt as to who was to blame. I sang on in lively strain without observing that the organist was gradually falling behind me, though he sometimes looked angrily across his shoulder. That part of the congregation who happened to be in a good humor followed me, whilst those who had cares to trouble them lingered behind with the organist. The minister, no great hero in music, tried to keep pace, sometimes with the one and sometimes with the other. It was not till I arrived at the end of the psalm, and with my co-singers was silent, that I noticed the playing and singing still continued. Then I awoke from my day-dream, and stared in my turn at the organist with a look of surprise at his mistake; but he paid no attention whatever to my signals of displeasure.

What the subject of the minister's discourse that day was, I am unable to say; and you will perhaps pardon a poor schoolmaster for his shortcomings in this respect, when you reflect that he had only eighty Swiss francs a year, and five healthy children, but who now thought himself on the point of obtaining a share of 90,000. Oh! could you look into such a heart and behold how the pleasing anticipations crowd, and swarm, and throng, hurrying and devouring each other, in a manner scarcely conceivable! To form an idea of such a state of things, put a glass of vinegar, modern fashion, under a magnifying glass, and witness the world of animalcules thronging about, annihilating and reproducing each other in never-ceasing activity. First come to the surface debts to be paid; these are swallowed by a thousand pressing necessities that present themselves in manifold variety, from deficiencies in the supply of children's stockings to the over-bed that wanted a new covering; in turn, these give way to a whole flood of wants that roll up dense and dark, overspreading the entire horizon of the thoughts.

Ah! the multitude of desires that spring up in the mind of a schoolmaster, with eighty francs a year and five children! How infinitely varied are the things he has had to do without, from a new pipe to that book which contains all that he might want and all that he might yet need to know!

I was quite frightened when the people rose up, for it was not till then I recollected being present at a sermon. Had I been asleep and set a bad example? Collecting myself, I joined devoutly in the prayer, and this time kept better pace with the organist.

At home, my wife had never seemed so slow in getting dinner ready; but never did I enjoy the meal better than this day. The good lady cast a doleful look at her last piece of meat, whilst I, merry as a cricket, was playing with the children. At last she said to me, "Peter dear, if I were you, I would not sell the hide till I caught the bear." I wiped my mouth, laughed at her, tied on my very best neck-cloth, and started off. Speeding on the wings of expectation, I was at the place of my destination long before two o'clock; but I could not then see the commissary, for he was still engaged examining the school-children.

The hearty dinner and the quick walk had made me thirsty, and excited a desire within me to take a drink, an inclination which, under ordinary circumstances, should have repressed; for I hold it wrong in a man to indulge himself whilst his wife had to say to the children at home, when they ask for a slice of bread, "No, wait a bit, and you will have some potatoes." With the exception of six kreutzers left with my wife, I had all the ready-money we possessed, which consisted of four batzen and a half. That is not much; but still, I thought, a man who expected a share of 90,000 francs, might spare a chopin out of it.

On entering the parlor of the inn, I noticed a number of people making merry in a private room; and before I had ordered my chopin, some one called out: "Hallo, Pedagogus, have a glass with me."

A schoolmaster, and one who has only four batzen and a half in his pocket, is not

lemur at such an invitation ; to see who offers it, and so the baker was an under-teacher, with joy, sat at the head of the table, inviting his guests as the giver of the chair to be brought to him, and me to sit down and help whatever I liked. I had dined

and could not eat, but did not touch wine, wondering all the while how a person in his position could be so extravagant a style.

On the appearance of the persons at the table, I judged that a christening was celebrated. Calling to the under-teacher had been my intention before, I concluded that my rejoicing over the advent of

The fool, thought I, fancies himself the eighth wonder of the world, probably forming schemes to secure for it at least the title of Commissary. He does not know that all fathers have the right to baptize their first boy ; but the baptism materially alters the state of the child, and dolefully they then sit at the table, and, on the eighth or ninth, are needed to slip under it although not destined to remain there as to the true cause of baptism, and the reason why any thing had been placed on

your way to the commissary not ?" said he. " Well, I have as good news for you as

I am in a rapture of delight to have come out of church to-day, and have been classed at 800 francs thought on the reception of the news I might enjoy myself a little."

He admitted that he was justified in my own position seemed dark, but began to assume a

hue ; for, thought I, when I see, who has scarcely escaped from the school and has had no sphere to his abilities beyond the Normal School nominated to 800 francs ought not I to look forward to being forty years of age,

had kept a school for nearly a quarter of a century and had commenced with very fair testimonials ?

I could not get away until the hour of my appointment was long past. On leaving, I promised to look in as I returned and report my success ; then with long strides I hastened to learn what estimate had been made of my abilities.

When I arrived, the commissary was walking up and down in front of his house, enjoying his afternoon whiff. Greeting me kindly, he expressed a hope that I had been put to no inconvenience ; " for," said he, " you would be pretty sure to learn the news that I have to give you soon enough."

" That is a curious remark," thought I.

" Yes," he continued, " I am sorry for you and some others, that things have turned out as they have done. I can not comprehend what they are about at Berne ; but such is always the way with people who imagine they possess infinite wisdom."

" The old gentleman is a little addled," thought I ; " for, if the councillors at Berne who allowed 300 francs a year to our under-teacher by way of a beginning, have endowed me in any thing like the same proportion, that is as much wisdom as I could reasonably expect them to possess ; it would be barefaced to look for more."

" What, then, Mr. Commissary, have they done ?" I inquired. " Very likely they have acted to the best of their ability, and people such as we are easily satisfied ; enough to keep away misery is all we want."

" Just so," rejoined the commissary, " and you will not have that for some time to come, I fear, if things go on as now. What you say is the reason why I regret to communicate to you the intelligence I have received. The authorities have not granted you an augmentation of salary, and have placed you in the class to which they can not allow a stipend of 150 francs. But on amending your qualifications, you are at liberty to make a fresh application ; and, so far, you may consider yourself fortunate, for had you been a month older, at the date of your examination, you would

have been declared incapable of improvement."

On hearing this statement, I stood staring with open mouth, and for a time could neither shut it nor move my tongue. At length I managed to stammer out, "I hope things are not so bad as you say."

"Unfortunately," replied the commissary, "they are exactly as I have described them, and I can let you see the declaration in black and white, if such is your wish."

I would gladly have stayed, and vented my affliction there and then, and at the same time asked whether any thing could be done to alter the decision; but I observed that the old gentleman was as much pained as I was.

With heavy heart I moved disconsolately away. I did not keep the promise I had made to return and let the merry-makers know how I had fared. Who will blame me, if I did not choose to parade my disgrace before the under-teacher and his friends?

I would gladly have welcomed a sympathizing heart, into which I could have poured my sorrows. Heavily oppressed, I felt as if I were walking knee-deep in mud, and a sheathing of lead incased my members. Every man I met startled me, fearing he might see by my appearance that I was a schoolmaster who had been deemed unworthy of 150 Swiss francs a year.

To avoid a group of bowlers, I slunk into the shade of a pine wood, where every thing was as gloomy as my own thoughts. My distress rose up like a spectre before me, expanding and becoming more fearful as I advanced. Throwing myself down, I hid my face in the damp moss and wept bitterly, every thing within and around me seeming dark, woe-ful, hopeless.

Ah, my fellow-creatures in adversity, should you desire that your tears may dry up, do not press your eyes on the bosom of the earth. Lift them upwards, thither where the sun shines, the stars sparkle like bright witnesses of the everlasting Light, that can transform sorrow into eternal joy. Those visible signs in the heavens affect the mind, and dispose it to cheerfulness and comfort.

Whilst brooding over my miseries the sun went down, and the stars were hidden behind the clouds. Thus, owing to the obscurity without and the darkness within, I could scarcely find my way.

The nearer I approached home the more downcast I became. What, thought I, would my wife say to the sad result! Should I at once confess what had transpired, or conceal it for a time?

I had not altogether concluded what to say when I arrived at the house.

Peeping in at the window, I saw the children ranged round the table singing a school-song, while their mother was sitting in the stove corner, with her head leaning down, so that I could not tell whether she wept or was asleep. This determined me to disguise the truth as long as possible, by giving equivocal answers and feigning cheerfulness.

Forcing a smile into my countenance, I entered the room with a bold "God grant you all a good evening!" The children started up, exclaiming "Good evening, father;" their mother, quickly drying her eyes, came forward, and saying, "You are late," sat down at the table, and then added, "I know you would like something warm, and I have got something for you."

In serving up the supper she asked no questions, but looked into my face, whilst I exerted myself to joke with the children; but I could not muster courage to say, "Mother, it has turned out badly." When the children had gone to bed, she sat down by my side and said, "Now, am I not right; you have been unsuccessful?"

I would not confess, but she absolutely refused to be deceived, asserting that she knew me too well to be mistaken in her impressions, and could tell by the first look whether I felt easy in mind. At last I had to communicate the misery I felt. She wept, and I tried to console her; but found I was in more need of consolation than she was. Indeed, our attempts to mitigate each other's sorrow only made the mutual grief more apparent. Next we tried to form projects, resolving to rise earlier and go later to rest; but on reckoning up, we discovered this would not much mend matters, for my hours of duty if increased would in no way augment the pay.

we thought of scattering our children amongst the good people who had said to take charge of them. This pained us both so much that it was felt upon. After exhausting our ideas, my wife remarked that it was, and, as we were both tired, we went to bed.

Commending ourselves to God, the petition was adopted. Sleep, my mother used to say, was the great ocean in which poor people drowned their miseries; but they always came up to the surface, and each time they were lighter. However, I could not. Gloomy thoughts haunted me like evil spirits; a animosity arose within me against the people who had placed so low an estimation upon my attainments, and I felt very inclined to go to law with them, to obtain justice in that way. At last, however, sleep came, and put an end to my contemplations.

It only changed the current of my thoughts; the phantoms of a vision took possession of my brain. I beheld the door suddenly open and give entrance to a new schoolmaster of the neighborhood.

He was a quarrelsome fellow, of a spare stature, thin and wiry; his white hair peeped over his eyes, and a large porcupine pipe with a straight short stem in his mouth. Holding a long writing in his hand, he placed himself, with his back to the door, in the centre of the room.

"Well," said he, "I dare say you have written very much as I have. I passed for a sensible man, always professed to be so, and people believed me. Now the Government came and placed me in a lower position. I felt myself and the credit of the school injured by this proceeding. I thought the people would have risen and demanded their obedience, on account of having been treated in such a scurrilous manner. But no such thing; they are all cowards and blockheads, afraid of the magistrates who are delighted at my disappointment. For I am a great deal too clever for them."

Now I have drawn up a petition to the supreme council, which I know to be composed of patriotic men. I shall show it to you, for I want you to sign it." The petition began by stating that the

Board of Education demoralized the people, allowed the teachers to starve, interfered with things they did not understand, and squandered away the schoolmaster's subsidies. Next it averred that the Government Council, by a treacherous silence, showed itself perfectly ignorant of the art of governing. Then came a variety of things about the clergy; how they alone were favored; and how it would be acting more wisely to pay teachers such salaries as the clergy had, since the former were of more service than the latter; adding that for aught the petitioner cared, they might transfer the stipends of the schoolmasters to the clergy. He (the petitioner) then spoke of the Superior Court, of the reactionary proceedings, and of a great many other things that I did not very clearly understand. Then came the conclusion, in which he demanded that the Grand Council should appoint a commission to bring the accused authorities to trial, and craved the councillors meanwhile to suspend the Superior Court, the Government Council, and the Educational Board from all their functions, so that no further mischief might ensue.

When he finished reading, he began to search for pen and ink, so that I might sign the document.

At this moment another figure glided forward from a corner of the room. How it had got in, I know not. It was that of a lean man, with a red face and remarkable nose. In one hand it held a good-sized cake, and in the other a bottle. It stood behind the schoolmaster, and shook its head very vigorously, making a variety of contemptuous movements with the cake, and at last began to speak, but in such a way that the other did not hear a word.

"Pedagogus," began the figure. "I have heard of your disappointment, and have come to condole with you. Behold this bottle. It contains old apple brandy of 1834, that will always refresh you, and the bottle will never get empty. Do not listen to that envious fellow there; envy is but a sorry passion at the best. As for railing against the clergy, disappointed men are very apt to do that. There are, no doubt, covetous, bigoted, ignorant men in the Church; but, if the examiners have

rated you too low, and others too high, they alone are to blame—not the clergy, the Superior Court, the Government Council, or the Board of Education. Nevertheless there is good fortune in store for you yet. A time will come when presents will be showered upon you, like manna in the desert. Coming home, your knapsack will be always full, and you will be able to feed your children like young ravens in the brook. Many a joy you will possess. You will be extolled over mountain and valley; ladders will be placed against your chimney, and hams and sausages will abound in your kitchen; all your miseries will be at an end. Therefore be of good cheer, and eat a slice of my cake, and drink a glass of my brandy, instead of signing envious petitions."

Meantime the schoolmaster, who had struck a light, lit his pipe, and found the pens and ink. Advancing toward me, he presented the petition for my signature, just as the other handed me a glass of his brandy; and there I lay, doubtful which to accept.

I wavered between the two like a reed in the blast. I could not well refuse to sign the petition of the little schoolmaster, for, small as he was, I feared him. Yet I was reluctant to append my signature; for I knew that the little man might, in the end, have himself and all concerned with him hung, particularly if the parties he was petitioning against remained masters. Then the apple-brandy and the cake were inviting. What could I do? Flesh and blood inclined me to yield to the eating and drinking—yet I hesitated.

The two tempters had drawn nearer and nearer, the schoolmaster stretching forth

the paper in one hand, and holding his pipe with the other; whilst his opponent, holding the glass and the cake, pressed his bottle to his breast. Adopting a middle course, I held my hand tremblingly for the paper, and shoved my mouth toward the brandy. This brought the two into contact, they touched each other, started back and stared at each other, as if doubtful how to act. Advancing again toward me, the little one wielded his pipe as a shield against the foe, and the other prudently covered himself with his bottle.

Not wishing to offend either, I continued passive. They, seeing that I was not likely to decide the contest, entered into a desperate struggle. I felt the paper thrust into my hand by the one, and the fiery fluid poured down my throat by the other. The pipe and the bottle were smashed in the conflict; both the combatants, falling upon my body, weighed me down, as if a rock were resting on my breast. In their rage, the one thrust some of the cake into my mouth, and the other did the same with his petition. Being thus nearly choked, my senses left me.

I awoke, bathed in perspiration. My wife, finding me trembling and moaning, had roused me. My body seemed bruised all over, and it being morning, I got up, but was even more dejected than on the evening before.

Seeing my mental depression, it occurred to my good wife to send me to the residence of a friend, that he might cheer me. This learned and eccentric friend whom I visited, persuaded me to write the chapters which will follow. I trust they will interest and profit my fellow teachers in America.

MEANS OF MENTAL DEVELOPMENT.

A CONTRIBUTOR in a late number of the MONTHLY said, "Human intelligence may be developed by two methods—by classical learning, and the mathematical studies; good educational instruction re-

quires both." This proposition asserts that all mental *culture* comes from two branches alone. Other studies, the writer would perhaps grant, are very well for other purposes—as, for example, the study of natural

, history, etc.—but are nothing worth discipline and development of the powers.

, preposterous as this proposition is, form, it is very widely received and upon by those who are engaged in on. The plan of education in our and colleges is almost universally upon this dogma. Look for it at our colleges. When a young is examined for admission, the examination is only in relation to language and natics, and not a question is asked of the natural sciences. Any of them is considered superfluous as concerns his being fitted for his course. Then after he enters college is drilled in the same two branches in two long years; and in the last years of his course he is taught, but in circumstances of the case very intently, in some of the natural sciences. is, which I know to be strictly true in colleges, is, so far as I have learned, the main at least, of the colleges in our country.

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one can dispute the general statement that *the act of acquiring knowledge of the kind has an influence in developing the powers of the mind*. In other words, the mind into action strengthens

and develops it, as muscular exercise strengthens and develops the body.

We advance another step. *Exercising the mind on some subjects develops the mental powers more than exercising it on other subjects*. The general rule on this point is, that the subject which awakens the most activity in the mind is the most valuable in this respect. Tried by this rule, natural science can not be put upon an inferior level. Every one will admit at once that its investigations call forth quite as much mental effort as the study of language. How is it now as compared with mathematics? Are not some of its grand conclusions capable of arousing the mind to as high and extended flights of thought as any of the greatest of mathematical solutions? Indeed, do not the mathematics derive their highest interest from their application to natural science, and thus show that the two are fitted to go hand in hand together in “developing human intelligence?”

We go a step still further. *In developing the mind each branch of study has its peculiar province*. It is manifest to every one that the mind in the study of mathematics is brought into a state of action different from that which occurs when it is studying language. The same is obvious in a comparison with the study of natural science. For a full and systematical development of mind, then, different branches of study are required. If any one be pursued to the exclusion of the rest, there will be an unsymmetrical, a distorted development. This is often seen in the influence of an undue prominence of mathematical study. This study serves to give definiteness to mental action, but fails to secure that range of action which is required in most of the circumstances in which the mind is called to act in life. In other words, while it gives strength and clearness, pursued alone it shuts up to such strictness that it inevitably narrows the mind. This is often seen. A man may have the most thorough and extensive mathematical training, and from the possession of mathematical genius may arrive at great eminence; and yet he may be, in the ordinary sense of the term, a poor reasoner—poor at making an argument—poor at arriving at such conclusions as must be

formed in the every-day business of life. Other training is needed here in connection with the mathematical. The study of language will partly supply the deficiency. But I know of no study which will do so much in this respect as the study of natural science, for this introduces the mind to a wide observation of various facts. It is the grappling with facts that not only gives to mental action an eminently practical character, but liberalizes and elevates it by the wide range of phenomena open to us in nature.

Much of the reasoning used in natural science and on ordinary subjects, it should be observed, is not strictly mathematical. Mathematical reasoning has to do with few points, and is, in a certain sense, simple. But many of the reasonings in natural science take in a large range of points, some of them often mere analogies, and are therefore very complex in their character. The same can be said of the reasonings upon which much of human action is based in business, politics, etc. If the strictness, not to say narrowness, of mathematical reasoning were to be applied in such cases, much of what we now consider settled must be marked as not proven, and doubt and uncertainty must everywhere be introduced.

It is what are called the observing powers that are most prominently cultivated in the study of natural science. And here let it be distinctly understood what I mean by observation. I do not mean the bare collection of facts through the action of the senses. Observation implies thought guiding the collection of the facts and making out their relations. It therefore implies reasoning in connection with the action of the senses. A good observer is a good reasoner, and is not a mere fact-hunter. Premising this, I remark that one of the chief aims of education should be to cultivate this observation. This is the basis of success in life—a true success. It is what makes the *well-informed* man, and fits him for the varied exigencies that may arise in his course.

One means of cultivating this observation is found in the study of natural science, for it supplies from earth, air, and water an abundance of facts to call forth

the action of the observing powers. But to secure the result, the study must be pursued aright. The chief object of instruction should not be, as it often is, to load the memory with the technicalities and hard names of science. The teaching of facts and simple fundamental principles should be the prominent object throughout, while the technicalities and terminology should be kept in the background, should not be introduced at all at the outset, and should be brought out gradually, even cautiously, as the pupil advances in his course of instruction. As an illustration of the wrong way of teaching natural science I would mention the common mode of teaching botany. The classification of plants is made the chief thing, while the interesting facts and principles of vegetable physiology, which should constitute the body of the study, are very much left out of view.

Adopting the plan thus indicated, natural science can be taught throughout the whole course of education, beginning with the child as soon as he learns to read; for there are phenomena all around us which can be made intensely interesting to the child; and the teaching of these facts, accompanied with such explanations as he can comprehend, is really teaching the beginnings of science. Much of what is called object-teaching can be made to assume this form.

Important as it is that the observing powers should be cultivated, not only is there a failure to do it in education, as it is commonly pursued, but the action of these powers is actually repressed, especially in the earlier part of the course. The child is alive to see all that is around him, and is full of inquiries about the phenomena that he witnesses. He is an observer, or in other words, a young philosopher. He is in an attitude of mind to learn a great deal, and will do so if he be taught aright. But subjected to the drudgery of rote-learning in the schoolroom, and practically given to understand that observation is no part of education, but that learning consists in spelling, reading, committing to memory words and forms of expression, and ciphering, he gradually gives up what the teacher would call his troublesome

ness. This unnatural course has influence, that it is a general fact that children are not as good observers at earlier ages, as they are at eight

discussion of these points would make the article too long. In conclusion, I stated, that there are indications of a change in the general plan of education, and the setting aside of the humdrum

drudgery of rote-learning, and the introduction of the study of things in place of the mere memorizing of words and forms. This is the grand reform that is needed, and we never shall realize fully what education is, until natural science is put on a level with the study of language and of mathematics, and, like them, is taught in proper gradations, from the outset of education throughout its whole course.

PEDAGOGICAL LAW.

II.

Teachers may understand the moral feeling, as well as the law, on the important subject of corporeal punishment. I will cite the opinions of the judges in every instance the identity of age in which they were deliv-

er. The Hon. John A. Dix was President of Schools for the State of New York, he gave the following as his opinion. The practice of inflicting *corporeal punishment* upon scholars, *in any case*, has no sanction but usage. The teacher is responsible for maintaining order, and he must be the judge of the degree and nature of the punishment when his authority is set at defiance. At the same time he is liable to be injured for any abuse of a power which is wholly derived from custom. *Common Schools Decisions*,

all authorities all one way.—The Supreme Court of Indiana expresses its opinion as follows: The law still tolerates corporal punishment in the schoolroom. All authorities are all that way, and the law has not thought proper to change. The public seems to cling to a system in the government of schools as been discarded everywhere else. Such training be congenial to our nature, and favorable to the full development of the future man, is worthy of consideration, though not for us to

discuss. In one respect the tendency of the rod is so evidently evil, that it might, perhaps, be arrested on the ground of public policy. The practice has an inherent proneness to abuse. The very act of whipping engenders passion, and very generally leads to excess. Where one or two stripes only were intended, several usually follow, each increasing in vigor as the act of striking inflames the passions. This is a matter of daily observation and experience. Hence the spirit of the law is, and the leaning of the courts should be, to discountenance a practice which tends to excite human passions to heated and excessive action, ending in abuse and breaches of the peace. Such a system of petty tyranny cannot be watched too cautiously, nor guarded too strictly. The tender age of the sufferers forbids that its slightest abuse should be tolerated. So long as the power to punish corporeally in schools exists, it needs to be put under wholesome restrictions. Teachers should, therefore, understand that whenever correction is administered in anger or intolerance, or in any other manner than in moderation and kindness, accompanied with that affectionate moral suasion so eminently due from one placed by the law "*in loco parentis*"—in the sacred relation of parent—the court must consider them guilty of assault and battery, the more aggravated and wanton in proportion to the tender years and dependent position of

the pupil. It can hardly be doubted but that public opinion will, in time, strike the ferule from the hands of the teacher, leaving him as the true basis of government, only the resources of his intellect and heart. Such is the only policy worthy of the State, and of her otherwise enlightened and liberal institutions. It is the policy of progress. The husband can no longer moderately chastise his wife; nor, according to the more recent authorities, the master his servant or apprentice. Even the degrading cruelties of the naval service have been arrested. Why the person of the school-boy, "with his shining morning face," should be less sacred in the eye of the law than that of the apprentice or sailor, is not easily explained. It is regretted that such are the authorities—still courts are bound by them. All that can be done, without the aid of legislation, is to hold every case strictly within the rule; and if the correction be in anger, or in any other respect immoderately or improperly administered, to hold the unworthy perpetrator guilty of assault and battery. The law having elevated the teacher to the place of the parent, if he is still to sustain that sacred relation, "it becomes him to be careful in the exercise of his authority, and not make his power a pretext for cruelty and oppression. (14 *Johns. R.*, 119.) Whenever he undertakes to exercise it, *the cause* must be sufficient; *the instrument* suitable to the purpose; *the manner and extent* of the correction, *the part of the person* to which it is applied, *the temper* in which it is inflicted—all should be distinguished with the kindness, prudence, and propriety which become the station. (*Cooper v. McJunkin*, 4 *Indiana R.*, 290.) This court has more sympathy for roguish youths, and less for hectoring teachers than any other, we believe, in the land. To our mind the reason why the law gives the teacher the right to punish is very clear and easily explained, but it does not seem to be so to this court.

3. *The teacher to have the benefit of any reasonable doubt.*—The Supreme Court of Vermont recently gave a very able opinion on this subject, from which we extract the following: A schoolmaster has the

right to inflict reasonable corporeal punishment. He must exercise reasonable judgment and discretion in determining when to punish and to what extent. In determining upon what is a reasonable punishment, various considerations must be regarded—the nature of the offense, the apparent motive and disposition of the offender, the influence of his example and conduct upon others, and the sex, age, size, and strength of the pupil to be punished. Among reasonable persons much difference prevails as to the circumstances which will justify the infliction of punishment, and the extent to which it may properly be administered. On account of this difference of opinion and the difficulty which exists in determining what is a reasonable punishment, and the advantage which the master has by being on the spot to know all the circumstances, the manner, look, tone, gestures of the offender (which are not always easily described), and thus to form a correct opinion as to the necessity and extent of the punishment, considerable allowance should be made to the teacher by way of protecting him in the exercise of his discretion. Especially should he have this indulgence when he appears to have acted from good motives, and not from anger or malice. Hence the teacher is not to be held liable on the ground of excess of punishment, unless the punishment is *clearly* excessive, and would be held so in the general judgment of reasonable men. If the punishment be thus clearly excessive, then the master should be held liable for such excess, though he acted from good motives in inflicting the punishment, and, in his own judgment, considered it necessary and not excessive. But if there is any reasonable doubt whether the punishment was excessive, the master should have the benefit of that doubt. (*Lander v. Seaver*, 33 *Vermont R.*, 123; 19 *Ib.*, 108; 4 *Gray*, 87; 3 *Dever. and Bat.*, 865; 3 *Salk*, 47; *Reese's Domestic Rel.*, 374, 375; *Wharton's Amer. Crim. Law*, 1,259; and 1 *Sanders on Pl. and Ev.*, 144.)

4. The Supreme Judicial Court of Massachusetts are of the opinion that *a ferule is a proper instrument of punishment*. In the case in which this decision was re-

there was evidence that the pupil obeyed a proper rule of school, which was published by the defendant to read in her presence. The defendant produced evidence to show that the pupil was obstinate, told falsehoods, and was insolent before and during the time of punishment; and alleged that it was for these faults that he inflicted the punishment.

There was also evidence tending to show that the punishment was not very severe till after the pupil had replied to the teacher with insolent words and manner; and it was proved that the defendant ceased punishing when the pupil acknowledged his fault, asked forgiveness, and promised to behave better. The defendant asked the judge to instruct the jury "that a teacher is amenable to the laws, in a criminal prosecution for punishing a scholar, only when he acts *malo animo*, with indictive feelings, or under the impulses of passion or malevolence; that he is not liable for errors of opinion or mistakes of judgment merely, provided he is governed by an honest purpose of punishing to promote, by the discipline of the school, the highest welfare of the scholar, and the best interests of the community; that he is liable in a criminal prosecution, for punishing a scholar, only for inflicting the amount of punishment inflicted more than adequate to subdue the scholar and secure obedience to the rules of the school." The judge did not instruct the jury as requested, but instructed them that a teacher had a right to inflict corporal punishment upon a scholar; that the punishment was one in which such punishment might properly be inflicted; that the instrument used (a ferule) was a proper one; that, in inflicting corporeal punishment, a teacher must exercise reasonable judgment and discretion, and must be governed, as to the mode and severity of punishment, by the nature of the offense, and by the age, size, and apparent strength and endurance of the pupil; that the only question in this case was whether the punishment was excessive and improper; that if they should find the punishment to have been reasonable and proper, the defendant could not be deemed guilty of an assault and battery; but if,

upon all the evidence in the case, they should find the punishment to have been improper and excessive, the defendant should be found guilty." The jury returned a verdict of guilty, and exceptions having been taken by the defendant to the foregoing charge of the judge, the case was afterwards argued before the appellate court, where the charge of the judge was declared to be correct. (*Commonwealth v. Randall*, 4 Gray, 37.)

5. *A lady teacher in trouble.*—This was an indictment for assault and battery. The defendant, Rachel Pendergrass, kept a school for small children, and punished one of them with a rod to such an extent as to leave marks, all of which were such as were likely to pass away in a short time and leave no permanent injury. The judge instructed the jury that if they believed that the child (six or seven years of age), had been whipped by the defendant at that tender age, with either a switch or other instrument, so as to produce the marks described to them, the defendant was guilty. The jury under this charge returned a verdict of guilty; but Rachel took exceptions to the charge, and the case was afterwards argued in the higher court, in which the following opinion was delivered for that gallant court by Judge Gaston: It is not easy to state with precision the power which the law grants to schoolmasters and teachers, with respect to the correction of their pupils. It is analogous to that which belongs to parents, and the authority of the teacher is regarded as a delegation of parental authority. One of the most sacred duties of parents, is to train up and qualify their children for becoming useful and virtuous members of society; this duty cannot be effectually performed without the ability to command obedience, to control stubbornness, to quicken diligence, and to reform bad habits; and to enable him to exercise this salutary sway, he is armed with the power to administer moderate correction when he shall believe it to be just and necessary. The teacher is the substitute of the parent; is charged in part with the performance of his duties and in the exercise of these delegated duties is invested with his power. The law has not under-

taken to prescribe stated punishments for particular offenses, but has contented itself with the general grant of the power of moderate correction, and has confided the graduation of punishments, within the limits of this grant, to the discretion of the teacher. The line which separates moderate correction from immoderate punishment can only be ascertained by reference to general principles. The welfare of the child is the main purpose for which punishment is permitted to be inflicted. Any punishment, therefore, which may seriously endanger life, limbs, or health, or shall disfigure the child, or cause any other permanent injury, may be pronounced in itself immoderate, as not only being unnecessary for, but inconsistent with, the purpose for which correction is authorized. But any correction, however severe, which produces temporary pain only, and no permanent ill, cannot be so pronounced, since it may have been necessary for the reformation of the child, and does not injuriously affect its future welfare. We hold, therefore, that it may be laid down as a general rule, that teachers exceed the limits of their authority when they cause lasting mischief; but act within the limits of it, when they inflict temporary pain. When the correction administered is not in itself immoderate, and, therefore, beyond the authority of the teacher, its legality or illegality must depend entirely, we think, on the *qui animo* with which it was administered. Within the sphere of his authority, the master is the judge when correction is required, and of the degree of correction necessary; and like all others intrusted with a discretion, he cannot be made penally responsible for error of judgment, but only for wickedness of purpose. The best and the wisest of mortals are weak and erring creatures, and in the exercise of functions, in which their judgment is to be the guide, cannot be rightfully required to engage for more than honesty of purpose, and diligence of exertion. His judgment must be *presumed* correct, because he is the judge, and also because of the difficulty of proving the offense, or accumulation of offenses, that called for correction; of showing the peculiar temperament, disposition, and

habits of the individual corrected; and of exhibiting the various milder means that may have been ineffectually used before correction was resorted to. But the master may be punished when he does not transcend the powers granted, if he grossly abuse them. If he use his authority as a cover for malice, and under pretense of administering correction gratify his own bad passions, the mask of the judge shall be taken off, and he shall stand amenable to justice, as an individual not invested with judicial power. We believe that these are the rules applicable to the decision of the case before us. If they be, there was error in the instruction given to the jury, that if the child was whipped by the defendant so as to occasion the marks described by the prosecutor, the defendant had exceeded her authority and was guilty as charged. The marks were all temporary, and in a short time all disappeared. No permanent injury was done to the child. The only appearances that could warrant the belief or suspicion that the correction *threatened* permanent injury, were the bruises on the neck and the arms; and these, to say the least, were too equivocal to justify the court in assuming that they did threaten such mischief. We think that the instruction on this point should have been, that unless the jury could clearly infer from the evidence, that the correction inflicted had produced, or was in its nature calculated to produce, lasting injury to the child, it did not exceed the limits of the power which had been granted to the defendant. We think also, that the jury should have been further instructed, that however severe the pain inflicted, and however, in their judgment, it might seem disproportionate to the alleged negligence or offense of so young and tender a child, yet if it did not produce or threaten lasting mischief, it was their duty to acquit the defendant; unless the facts testified induced a conviction in their minds that the defendant did not act honestly in the performance of duty, according to her sense of right, but under the pretext of duty was gratifying malice. We think that rules less liberal toward teachers can not be laid down without breaking in upon the authority necessary

serving discipline, and commanding and that although these rules leave air power to commit acts of indiscrepancy with legal impunity, these actions will probably find their check in parental affection and in opinion; and if they should not, they must be tolerated as a part of imperfections and inconveniences of human laws can wholly remove them. (*The State v. Pendergrass*, 2 *ind Bat. R.*, 895.)

It is undoubtedly true that in order to an indictment for assault and battery it is necessary to show that it was committed *ex intentione*, and that if the intent is wanting, the offence is let out. But this intent is always inferred from the unlawful act. The undue and excessive use of force on

the person of another being proved, the wrongful intent is a necessary and legitimate conclusion in all cases where the act was designedly committed. It then becomes an assault and battery, because purposely inflicted without justification or excuse. Whether, under all the facts, the punishment of the pupil is excessive must be left to the jury to decide. (*Commonwealth v. Randall*, 4 *Gray*, 38.)

7. Whether the instrument used by the teacher, for the punishment of a pupil, was a proper one, is for the jury to decide, in consideration of all the circumstances of the case. Evidence that the same kind of instrument was used in other schools in the vicinity will rebut the charge of malice, by showing that the teacher did not resort to an unusual instrument. (*Lander v. Seaver*, 32 *Vermont R.*, 125.)

EARLY THEORIES CONCERNING THE EARTH.

At the most ancient times, the speculations of philosophers have been directed on investigations of the geography and astronomy of our globe. Speculations of every character, varying from frivolity to the most profound reason, have been offered to account for its phenomena. To these speculations especial importance is attached, not only because of their relation to pure science, but also because they illustrate the gradual development of the human mind. In the earlier theories were mere fanciful conceptions. Hypotheses, offered for the explanation of natural occurrences, were supported only by dogmatic assertion, or by metaphysical reasoning. Careful investigation into facts, and searching investigation of causes were unknown. But we pass from the mythological story to the upholding of the heavens, to the discovery of gravitation by Newton, and, in later days, mere theories, arising of an untutored and unre-

strained imagination, are no longer received, and that metaphysics are no longer employed to breed confusion in natural science. We are struck, too, by the complete emancipation from that ancient religious bondage, or rather intolerance, which fettered science, by denouncing as atheists and threatening with loss of life all those whose abler intellects shook off the trammels which bound their contemporaries. With the perfecting of mechanical ingenuity and the increased knowledge of mathematics, together with the greater opportunity and desire for investigation, scientific determinations have become more exact; and now, by the term theory we no longer understand a fanciful conception, but rather the inference deduced from an accurate comparison of facts obtained by careful research. Instead of the besotted superstition which once prevailed, exercising its pernicious influence upon every action of the mind, we find an almost universal incredulity, which readily

rejects every scientific hypothesis not fully borne out by facts.

As appears from what has been said, these theories form one of the most interesting chapters in the history of the human intellect. A brief review of them therefore can not fail to be interesting and instructive. We shall briefly examine the more prominent theories which have been advanced respecting the geography, astronomy, and cosmogony of our planet.

EARLY GEOGRAPHY.

The earliest system of geography on record is found in the writings of Homer. That author regarded the earth as a flat oval body of very limited extent, surrounded on all sides by a mighty river, called Ocean. This system was universally received until Thales, about six centuries before Christ, asserted that the earth was a sphere. This view was adopted by the Pythagoreans, but, being unsupported by observations, was accepted by very few, and was soon forgotten. Plato afterwards taught that the world was composed of twelve pentagons, while Anaximander maintained that the form was that of a cylinder. At length, as commerce extended, the spherical form of the earth was demonstrated, and has been accepted without cavil since the first century of the Christian era. Perhaps the most extravagant reverie ever presented, concerning the earth's form, was that of Captain Symmes, who some forty years ago advanced the theory that the earth is a hollow sphere, whose interior is inhabitable or at least accessible by openings at the poles. This enthusiastic officer actually sought opportunity to explore the polar regions to test the truth of his hypothesis, which was called the "American theory."

At a very early period attempts were made to ascertain the circumference of the earth. Aristotle says that, in his time, it was believed to be 400,000 stadia. Eratosthenes' calculations gave only 250,000 stadia (probably about 31,500 Roman miles, for we are uncertain as to the length of the stadium used); while another observer could only obtain 240,000,—and this result was reduced, by subsequent calculations,

to 180,000 stadia. The first results approaching accuracy were obtained by Snellius, a Hollander, who in 1615 measured off an arc of a meridian by triangulation, and so gained an approximate result. Maupertius afterwards used the same method of measurement, and calculated as the distance 25,000 miles, which varies very slightly from the length of a meridian as now determined.

Among the ancient Greeks geographical knowledge was very limited. According to their system, the earth terminated on the north by the imaginary Rhiphaean mountains, inhabited by the Gorgons; on the west by the Pillars of Hercules, or Straits of Gibraltar; on the south by Ethiopia; and on the east by the Euxine or Black Sea. Beyond these limits flowed the mighty river Ocean. At the extreme north, or "Thule," there dwelt, in darkness, the Cimmerians, a fabulous race; while underneath, in the cavern of Tartarus, the Titans, foes to the gods, lived in a never-ending night.

The earliest recorded attempt at enlarging geographical knowledge was made by Pharaoh Necho, king of Egypt, who, about 600 B. C., dispatched an expedition down the Red Sea for this purpose. The fleet sailed around Africa, and coming northerly reached the Pillars of Hercules, through which it returned to Egypt by the Mediterranean. Herodotus doubted the history of this expedition, from the fact that, during a portion of the voyage, the sun was at the south, while again it was at the north of the explorers. This observation, however, when examined by the light of modern discoveries, affords the strongest possible proof that the expedition actually sailed in those regions. In the fifth century B. C. Hanno sailed from Carthage, and explored the whole coast of Europe as far north as Britain; and afterwards the conquests of Alexander extended the boundaries of the known earth toward the east.

It was not until within two centuries B. C. that any attempt was made to found a scientific system of geography. About that time Eratosthenes, a Grecian philosopher, offered his celebrated theory. He conceived a line, nine thousand miles long,

st and west through those places
 agest day was fourteen and one-
 y, which was crossed perpendicu-
 -nother line, five thousand miles
 ning north and south. The ex-
 of these lines marked the limits
 five thousand by nine thousand
 ich included all the inhabitable
 of the globe. Beyond these
 is an impassable ocean of un-
 -tent, but which, the shrewd
 r conceded, might possibly con-
 - islands or continents. About
 red years later, Strabo wrote his
 . geography, a work which has
 ly admired in all ages for its
 l elegance of style. While this
 dopted many of the views of
 nes, he far excelled that writer
 cy of description. His work,
 was reliable only concerning the
 out the Mediterranean, as it con-
 y erroneous statements concern-
 : and Western Europe.

THE FIRST MAPS.

nor of producing the first map
 ved for Hipparchus, the astrono-
 lived about a century and a half
 was the first who applied lines
 e and longitude to the marking
 lative distances. Ptolemy, who
 it 120 A. D. and was distinguished
 geographer and astronomer, pro-
 vork on geography, which though
 respects exaggerated, was far
 o any of its predecessors. This
 l the map which accompanied it,
 the main, accepted as perfectly
 ntil the beginning of the sixteenth
 when several important errors in
 were discovered, which rendered
 gh correction of the map neces-

PROGRESS OF DISCOVERIES.

rogress was made in geographical
 r nearly fourteen centuries. Few
 s were made; only Iceland, the
 nd the Canaries on the west, and
 insignificant lands on the east, had
 ed to the map. True, the hardy
 of the north had explored the
 America as far south as Long

Island, and had established colonies in
 Greenland and New England; but before
 the end of the eleventh century the colo-
 nies had perished, and, by the time of
 Columbus, had entirely passed from the
 minds of men. Africa was yet, as indeed
 until within one hundred years of our own
 time, a true *terra incognita*. The most
 extravagant and fabulous reports prevailed
 concerning its inhabitants. Men and ani-
 mals of gigantic size and shadowy form
 peopled its vast deserts, while monsters of
 hideous deformity existed in its southern
 borders.

Towards the close of the fifteenth cen-
 tury the travels of Marco Polo in the East
 attracted attention, and drew men once
 more to the consideration of geographical
 questions. About this time, strange tim-
 bers floated from the west upon the Azores,
 and the bodies of two men, from the same
 direction, drifted about in the currents
 until they were thrown upon the Canary
 shores. Men were already eagerly seek-
 ing some shorter passage to the Indies
 than the tedious route which doubled the
 Cape of Good Hope. Convinced of the
 sphericity of the earth, and influenced by
 the occurrences just mentioned, Colum-
 bus, the great admiral, concluded that,
 by sailing westwardly, he could reach the
 Indies in a much shorter time than by any
 other route. His efforts were crowned
 with success, and his discovery of the
 Western Continent opened the only way
 by which we could attain to a true system
 of geography.

Since the discovery of America geo-
 graphical science has advanced with great
 rapidity. We are no longer compelled to
 theorize concerning unknown countries, and
 our maps are no longer disfigured by yel-
 low blanks, marked "unexplored regions,"
 for all have been in a measure described.
 Those problems of the ancients, the sources
 of the Nile and Niger, have been solved by
 the intrepid explorers of this century.
 Ethiopia has been as thoroughly explored
 by Livingston, Burton, and Barth, as China
 or India by others; the islands of the
 Pacific and even the lands about the poles
 have been marked out and named. Maps
 are now in every house, and the child of
 twelve years knows more of our globe than

did the wisest philosopher of Greece or Rome in the days of our Saviour or at the fall of the Roman empire.

THE EARLY ASTRONOMY OF THE EARTH.

The most primitive system of astronomy was that of appearances, which placed the earth in the centre of the universe, and regarded all the other heavenly bodies as revolving about it once in twenty-four hours. This was the system maintained by the ancient Egyptians and Chaldeans, and afterwards modified by Ptolemy. The first theory on record differing essentially from this was that of Pythagoras, who, in all probability, received it from the Egyptian priests during his travels through their country.* This philosopher held that, as the sun was fire, and therefore the most dignified object in the universe, it occupies the center, and the earth revolves about it once in a year. Diogenes Laertius says that Philolaus, a disciple of Pythagoras, endeavored to explain the apparent revolution of the heavenly bodies, by assuming a diurnal rotation of the earth. This hypothesis throughout resembled very much that of Copernicus, propounded nearly twenty centuries later, but was encumbered with so great a mass of rubbish, and was so repugnant to the received views, that, being supported by no natural authority, it soon passed from the memory of men. So soon indeed, that in a work recounting the varied astronomical theories previously given, published about the beginning of our era, no mention is made of that of the Pythagoreans, although the doctrines of that school had been fully set forth by Aristarchus only two centuries and a half before.

The next theory which claims our attention is the Ptolemaic; so termed from its author, Claudius Ptolemæus, a Roman geographer and astronomer, who lived under the emperors Adrian and Antoninus. This speculator believed that the earth is

in the center of the universe, and that around it the heavenly bodies moved in the following order of distance—the moon, Venus, sun, Mars, Jupiter, Saturn, and the fixed stars; above these are two spheres forming the crystalline heavens; beyond these is the *primum mobile*, which in some mysterious manner revolves once in twenty-four hours, and carries with it the heavenly bodies. Outside of all, and surrounding them, was the *cælum empyreum*, or abode of spirits. This theory was apparently so simple, and so perfectly in accordance with natural appearances, that, notwithstanding the many inconsistencies and even gross contradictions in the system, it retained ascendancy over all others for upwards of fourteen centuries.

During this long period investigations were continued. Discoveries of peculiar planetary motions were made, many of them exceedingly difficult of explanation by the Ptolemaic theory. Additions to it were constantly made, until at length the system became so excessively cumbrous and complicated that a conceited king of Spain once remarked, "Had I been of God's council when he made the heavens, I could have taught him how to mend his work." About the end of the fifteenth century, Nicholas Copernicus, a Polish canon, becoming convinced of the incompetency of the accepted system, began anew the investigation of the heavenly bodies. Nineteen years of intense labor resulted in that greatest and complete system which bears his name, and, with few changes, is now received throughout the civilized world.

This system, as now maintained, makes the sun the center around which the planets revolve, in set periods, in elliptical orbits, attended by the satellites, which in turn revolve about their primaries. Copernicus did not live to complete his labors. He was so opposed and hampered by the bigoted prelates of his age, that his great work, "*De Orbitus Cælestium*," was suppressed, and he received the first copy of it only on his death-bed.

(To be continued.)

* Mr. Lewes doubts this, but the presumptive evidence is so strong that we accept it.—*Editor.*

FRENCH NOVELTIES IN EDUCATION.

ATRIOTIC educationist, in an address to "la belle France," suggests inside every town-hall throughout France, there should be tables exhibiting names of famous kings, poets, and and inscriptions of the most able events that have happened in neighborhood. He would turn the of railway stations and waiting-rooms account, covering them with the of the largest towns, the principal monuments, and the most famous the vicinity; and with indications prevailing industry of the district, magical character, and the like. He that the "odds and ends of time," stood in front of the town-hall, and way stations and waiting-rooms, has been turned to account; and, by proof, urges a consideration of the, around the large colored railway fixed to the walls of some railway, there is generally a group of students composed, for the most part, of men.

would be glad to believe that some of the kind might be undertaken if on the City Hall barracks, and Court-house fence, and the ferry-the metropolis, we were to substitute of Niagara Falls, and statistics construction of Suspension Bridge, in glaring notices of Plantation Bitters cabalistic S. T.—1860—X., the would certainly have no disastrous on Young America, and might possibly some beneficial result in an esthetic view. Our parks and thorough-ould, doubtless, be no less advanced to our fashionable belles, if they were occasionally forced to read canonical statement, or acquire some natural history, instead of being only reminded of the questionable of "ambrosial" balsams, and com- undergo an interminable ortho-discipline, in the necessity of a ; spelling of "Sozodont" and iron."

Other gentlemen, petitioning the make less feasible proposals. One

of them, impatient to see all the provincial *patois* die before himself, prays the Senate to require that no teacher shall allow a pupil to utter a word that is not French, and that only French expressions shall be allowed in catechisms, sermons, and town-council discussions. Another memorialist prays the Senate to order the publication of a "popular library," which all citizens shall be obliged to purchase, the plan being to present every citizen with one volume annually, and to add the cost of the volume to the poll-tax. The third memorialist, having noticed the rapidity with which children, after leaving school, lose whatever facility of reading they may have acquired there, prays that the government would establish, at its own expense, a small weekly or monthly journal, to be distributed among the young who no longer attend school. These ideas seem to be a little in advance of even French progress. On all of the memorials the Senate passed to the order of the day.

Among the practical innovations is the introduction of sewing-machines in the schoolroom. An appropriation has been made for the purchase of four sewing-machines, one of which is to be placed in the Douai Female Normal School, the others in the parochial schools of Lille, Valenciennes, and Dunkirk. In New York and other cities, where the newspapers teem with propositions to teach the theory and practice of the sewing-machine, and schools are established promising to graduate "perfect operators for only one dollar," there is no necessity for the adoption of this French novelty. But it may be that this would be a desirable feature in some suburban and especially in rural schools, if for no other purpose than to impress upon the popular mind the advantages of the great domestic labor-saving machine. The harp—beautiful in its poetical associations, but useless and insignificant in its application, in this piano-playing age—is taught even in backwoods seminaries; surely a cabinet-case sewing-machine is as interesting as a work of art, and the plainest one far more

utilitarian, and more consonant with the elements of our practical civilization.

After all, we can expect to derive but little advantage from any French novelties in education. France has done much for the welfare of the deaf and dumb and the blind, much for science and art, and

much for general philanthropy. But, looking abroad, our eye rests on another spot, where we hope for educational advancement. Germany has, within a comparatively few years, done more for popular instruction than France could have accomplished in a century.

OBJECT-LESSON ON IRON.

TEACHER. Now, class, look at this, and tell me what it is.

C. A piece of iron.

T. Yes. You may name as many of its properties as you can, and I will write them on the blackboard for you.

C. It is heavy, hard, solid, stiff, of a dark color, dull, can't see through it—

T. Stay, that will not do; "can't see through it" will not look well on the blackboard; you must think of a word to express that property.

C. Opaque.

T. Right; go on.

C. Iron is imperfect.

T. How did you discover that?

C. You told us that gold, silver, and platinum are the only perfect metals; therefore iron must be an imperfect metal.

T. Very good; I am quite encouraged to find you remembering so well, and reasoning for yourselves. Can you think of any other properties? Can I break this piece of iron?

C. No; it is tough.

T. A better word?

C. Tenacious.

T. Right; and if it is tenacious, what other properties will it be likely to possess? Do you remember what we said upon this subject when we were talking about gold?

C. Yes, teacher; it will be malleable and ductile.

T. Because it is tenacious?

C. No; but it could not be malleable and ductile if it were not tenacious.

T. Very well; can you name any sub-

stances that are tenacious, but possess neither of the other properties?

C. Wood, leather, cloth, and paper.

T. Right; all metals, however, possess the properties of malleability, ductility, and tenacity, in a greater or less degree. Will iron melt?

C. Yes.

T. Therefore it is—?

C. Fusible.

T. Right. Now I will show you the other side of this piece of iron; what will you say of it?

C. It is rusty, red, and rough.

T. What will make iron become rusty?

C. Letting it remain in water.

T. In the course of time what will the rust do to the iron?

C. It will eat it away.

T. Do you know a word which expresses this property of being eaten away by rust? No? It is corrosive. Acids will corrode more quickly than water; what is an acid?

C. Any thing that has a sharp, sour taste.

T. Yes; now read over the properties of iron, as they are written on the blackboard.

C. Iron is heavy, hard, solid, stiff, of a dark color, dull, opaque, imperfect, tenacious, malleable, ductile, fusible, and corrosive.

T. What is done to the iron to make it malleable and ductile?

C. It is heated.

T. Do you know how many kinds of iron there are?

se; forged iron, cast iron, and

y good; do you know any other forged iron?

ught iron.

it is the meaning of the word

ked.

; what then do you understand iron to be?

worked into shape.

what must be done to it before soft enough to be beaten into the

shape desired?

ust be made hot.

it is the iron block, upon which smith forges his iron, called?

anvil; a forge.

are correct. What is cast

melted until it can be poured

da.

; it requires a great degree of

convert iron into a liquid; you

haps, some of you, been in an

try, and have seen the liquid

ng heavily down from the fur-

ve, teacher.

can tell us something, then, of

of casting, and of the moulds.

moulds are made of a kind of

clay; all the patterns that are to

work on the iron, are hollowed

clay; and all patterns that are to

lloved on the iron, are raised on

After the melted iron is poured

shapes, it remains to get quite

moulds are then broken off,

iron remains of the required

ch is the more durable, wrought

on?

ught iron; cast iron easily

C. It is made hot, and then put into cold water.

T. Yes; the fire for heating it is chiefly composed of charcoal ashes and bone shavings; this gives the iron a whiter appearance, and renders the grain, if I may call it so, closer and finer. After this heating it will bear a very high polish. What is the red-hot iron plunged into cold water for?

C. To make it hard.

T. You would do better to say, "To temper it." The temper signifies the degree of hardness and brittleness, or of softness and elasticity to which it is brought: the more suddenly it is cooled, the harder and more brittle it becomes; the more slowly it is allowed to cool, the softer and more elastic it will be. What do you understand this property, which we call elasticity, to be?

C. The power to spring back into the shape it has been forced out of.

T. Very well. Now tell me some of the uses of iron.

C. To make stoves, machines, engines, chains, farm and garden tools, ships—

T. You would find it difficult to name all the uses to which iron is applied, they are so numerous; but we must not omit cutlery. Who can tell what cutlery is?

C. Knives, scissors, swords, chisels, plane-irons—

T. Yes; instruments used in cutting. Of what are they chiefly made?

C. Of steel.

T. Why is steel used for the manufacture of cutlery?

C. Because it is hard; it will take a fine keen edge; and can be highly polished.

T. Which do you consider the more useful metal, iron or gold?

C. Iron.

T. You are quite right; the loss of iron would cause us far more inconvenience than the loss of gold would; yet we are in the habit of speaking of gold as being more precious than iron, and it is far more expensive. How is this?

C. Because there is less gold than iron in the world.

T. You are right; the value of any article is determined by its abundance or scarcity, and by the ease or difficulty with

which it can be obtained. Where is iron found?

C. In almost every country in the world.

T. It is; and we shall do well to notice the wisdom and benevolence of God, in thus universally diffusing so useful a metal. Had it only been found in a few places, it would not have been, as it is now, within the easy reach of all: the cost of transportation would have made it much more expensive. But Edward has a question to ask, let us hear what it is.

E. What do you mean by transportation, teacher?

T. Are you puzzled by a word so easily defined? The class will turn their thoughts from iron to derivations, a few moments. What does the affix "tion" signify?

C. The act of.

T. Very good. Now there are two other parts to the word. Give me the roots and significations.

C. Porto, to carry; trans, over or beyond.

T. Well, then, the word means—?

C. The act of carrying over.

T. Yes; then the expense of carrying iron a long distance, either over land or water, would make it cost more. As you have been very attentive to the lesson, I will tell you one or two historical facts which have some connection with our subject.

Peter the Great, emperor of Russia,

learned the trade of a blacksmith, in order to set an example to his subjects; and when he worked at the forge, he made the boyards, or noblemen, blow the bellows, stir the fire, carry coals, and perform all the other offices of blacksmiths.

Gustavus Vasa, king of Sweden, worked as a common laborer in the iron mines of Dalecarlia; the miners grew very fond of him, and heartily embracing his cause, enabled him to resist the tyrannical Danish king, Christian the Second. The memory of Gustavus Vasa is still held in great veneration.

A few years ago, an American blacksmith, who was very fond of learning, undertook to study different languages, and was so diligent that he soon learned, I think it was, fifteen languages. He then started on a tour through Europe, delivering lectures. People call him "the learned blacksmith."

Boys, what can hinder some of you from doing as well? Diligence and perseverance will enable you to overcome difficulties, and to rise to any height which other men have been able to reach: perhaps even to go a step beyond them.

"All that other folks can do,
Why, with patience, should not you?
Only keep this rule in view,
Try, try, try again."

The lesson should now be recapitulated.

THE UNFINISHED PROBLEMS OF THE UNIVERSE.*

III.

THE TWO METHODS OF OBSERVATION.

WE have converted time into space; this was the first grand accomplishment for perfecting observations. A second of time by the old method was marked out

by the beats of a clock. When the observer desired to fasten the precise moment at which his star crossed the meridian wire of the telescope, fixing his eye upon the star, with his ear he took up the beat of the clock. This was the exact order of observation. He commences his count—"Five, six, seven, eight, nine;" and between "nine" and "ten" the star passes the

* Address by the late Prof. O. M. Mitchell. "Pulpit and Rostrum," No. 3. New York: Schenmerhorn, Bancroft & Co.

n wire. He divides the space over he star appears to pass in a second into ten equal parts, as nearly as and enters in his note-book that : passed the meridian wire at so ours, so many minutes, so many , and so many tenths. That was method. If the astronomer were upon to mark the passage upon ired, as is often done in a transit ent, when he shall have obtained sage of the first wire, he stops and t in the note-book. He must keep nt of the clock, and he must keep upon the star; and his attention is between a variety of objects.

by the new method, the clock its own beats, takes care of itself; astronomer has nothing to do with electro-magnet under the control pendulum of the clock (which by its swinging backward and forward, a delicate wire upon an axis, so as t at every swing into a cup of mer- ad close the circuit) brings a point and strikes a dot upon the disk ng with uniform velocity to meet that at the end of every second a truck upon this disk; and thus, dot , every second of time is formed ace. Then, taking up the microme- may cut the intervals between the to ten thousand parts; and thus we them down to any degree of exacti-

n this great experiment was made outset, I attempted to unite this iece of revolving wire, moving up own, with the telescope, by some al sufficiently delicate and perfect to olish the result. I found it next to ible to get material which would the purpose. So delicate had the be, that a single fibre of silk, or a human hair as fine as ever graced ad of beauteous maiden, was all too for this purpose. It had not the te spring for such a delicate move- and when this point dipped into the y it rebounded, and there were touches instead of one. At length to the spider, for aid in this dilem- spun from him a web, which for long years in every second of time

was expanded and contracted, and performed the mighty service of uniting literally and absolutely the heavens with the earth.

THE NEW METHOD OF OBSERVATION.

When the star enters the field of view, the observer, located at his transit instrument, has near him a magnetic key, such as belongs to all the telegraphic offices. That key being struck, brings down a pen-point by the action of electro-magnetism. Here is the revolving disk; here the steel point; and when the key is touched, down comes the point, and striking upon the disk rebounds instantly, and the disk moves on uninterruptedly; and thus you have time, from second to second, converted into space upon the circumference of the disk. When one circumference of the disk is full, the disk moves itself on a little railway track just far enough to present a new circumference for another line of dots; and when the disk is filled, you have a perfect time-scale, absolute in its character, on which the clock, by automatic power, has recorded its own beats, and made a perfect record of itself. On that disk, by another magnet, another point is drawn down, and strikes, at the will of the observer, the precise moment at which he marks the transit of the star across his meridian wire; so that all he has to do is this: Take his place at the telescope, watch the coming of the star, pay no attention to the clock (for that takes care of itself), and at the instant his eye catches the bisection of the star by the wire, touch the key, the record is made, and all is done. Thus, by this new method, the astronomer is relieved of the intense responsibility of the old method—wearing out his nerves, destroying his system, and rendering him, at the end of a certain time, incapable of continuing his observations. Another advantage gained, is that we may introduce as many wires as we please upon which to mark the transit of the stars, and thus reduce our observation to as great a degree of precision as we may desire. By the old method, remember, the observer is compelled to stop after the passage of one wire, and record the observation; and while he is doing

that, the star is going^d on. By the new method, he has nothing to do but to touch a key, and the observation is recorded. Such is a rough outline of this new method of astronomical observation. So perfect is this method, that we read from the disk with the utmost possible facility; and we have conducted this examination in such a manner, that now the thousandth part of a second is a quantity of time which we appreciate and employ every day.

PRACTICAL USES OF THE NEW METHOD.

Soon after the application of these new methods, it was manifest that we could, by the magnetic telegraph, determine the difference of longitude between two places with wonderful precision. Here is one of the greatest triumphs of modern science. When we reflect upon the results reached by the telegraphic communication between distant points in the determination of longitude, it seems positively as though modern science and skill paid no longer any attention to time; that it just crushed, crowded, and condensed a hundred years into a single hour! And it has been done. You go now and examine and determine the difference of longitude between the great Observatory of Paris and that of Greenwich, and you will find that by the telegraphic method, by these new means, we get better results in a single hour of one night than had been reached by all preceding time, although they had worked for two hundred years. In this particular department of astronomy, in linking together the different observatories of the world, we have now an advantage that no old astronomer ever possessed.

TO ESTIMATE DIFFERENCE OF LONGITUDE.

Suppose we wish to determine the difference of longitude between New York and Philadelphia. The city which is furthest east will have a meridian such that the star will cross earlier than in the western one. Now suppose the two observers are in telegraphic communication, and that there is a disk at each extremity receiving clock-beats. The observer in New York signalizes his friend in Philadelphia, and says, "The star is coming up to New York—look out!" and standing by

the telegraph, the instant the star passes his meridian, he strikes the magnetic key, and the moment it is recorded on his disk it is recorded in Philadelphia. Then the Philadelphian waits until the star comes into his field of view, and he signalizes his friend in New York that the star is in the field of view; and the moment the transit occurs, he strikes the key, and the record is made. The interval of time between the two records is the difference of longitude. The process is perfectly simple; there is no difficulty about it; all can comprehend it.

There are now two delicate questions yet to ask. The difference of longitude is actually obtained upon the supposition that all is perfect, and that this swift-winged messenger, the lightning, has flashed from one point to the other with infinite velocity. If it do not travel with infinite velocity, if it has lagged at all by the way, in communicating the messages, that amount of error will be entailed upon the result. Then it becomes necessary to investigate the great problem—

WITH WHAT VELOCITY DOES THE ELECTRIC CURRENT FLASH ALONG THE WIRE?

I have had the opportunity of investigating this problem. I secured a telegraphic communication of wire entirely around from Cincinnati to Pittsburg and back again, in order to determine whether electro-magnetism accomplished the circuit of six hundred and seven miles of wire instantaneously, or whether it took some time. My disk was prepared, and the clock-beats were being received upon it. I arranged that two pens should record upon a metallic disk by steel points, by the most delicate dots imaginable, the time for the passage of the electric current. Then I prepared inside the observatory a short circuit of six or eight feet of wire, and to that battery I gave the identical intensity which belonged to the battery for the long circuit. I then arranged so that I could interchange these two points with each other, making one move with the long circuit, and the other with the short, at pleasure. Having arranged the whole apparatus, I watched, with the deepest interest, to see whether the clock-beats,

as recorded by the two pens upon the disk, would fall at the same moment of time, or whether an interval would exist which the eye or the ear could detect. But when the pens fell, it wanted a keener and sharper ear than mine to detect any difference. I then looked to see whether the dots struck were in a straight line radiating from the center of the disk; but with the most rigorous examination, I could discover no difference. I was compelled to restrain my curiosity until the night should pass and the daylight come

again. Then, with an instrument constructed for the purpose of measuring the thousandth part of a second, I measured the interval between the two dots—those struck by the *long*, and the others by the *short* circuit. I found invariably the same result in more than a thousand observations. I divided a second into one thousand equal parts; and that journey of six hundred and seven miles was performed in twenty-one of those parts—in twenty-one thousandths of one second of time.

ROMANCE OF NATURAL HISTORY.*

HIGHLY attractive to a young observer is the variety of life which meets his eye, as he examines, with a good microscope, a drop of water from some pool rich in organisms. Suppose he has nipped off the growing terminal bud of some *Myriophyllum* or *Nitella*, and, having a little broken it down with the point of a needle, has placed it in the animalcule-box of the instrument, with a small quantity of the water in which it grew, selected from the sediment of the pool-bottom.

The amount of life at first is bewildering; motion is in every part of the field; hundreds and thousands of pellucid bodies are darting across, making a mazy confusion of lines. Aggregations of little transparent pears, clinging together by their stalks so as to form balls, go revolving merrily through their waste of waters. Presently one of the pears severs its connection with the family, and sets out on a voyage on its own individual responsibility; little tops of clear jelly with a few specks in the interior.

Here comes rolling by a globe of glass, with sixteen emeralds imbedded in its substance, symmetrically arranged, each emerald carrying a tiny ruby at one end. Elegant forms, resembling fishes, or battle-dores, or poplar-leaves, for they are of many kinds, all of a rich opaque green hue, with a large transparent orange-col-

ored spot, wriggle sluggishly by, the leaves now and then rolling themselves up spirally, and progressing in a cork-screw fashion. Disks of clear jelly are seen, which are continually altering their outline, so that you soon come to the conclusion that they have no particular form, but every imaginable one in turn.

The mass, which seems a mere drop of thin glaire, almost or quite homogeneous, with only one or two bubbles in it, pushes out points and projections from its outline, excavates other parts, lengthens here, rounds off a point there, so that it never appears twice in the same shape. Here a tiny atom arrests the eye by its singular movements. Its appearance is that of an irregular ball, with a bright spot near the circumference; the whole surface set with bristles projecting obliquely from the periphery. It remains in one place spinning round and round upon its center, sometimes so rapidly as to preclude any sight of its distinctive characters, at others more deliberately, displaying its bristles and surface. Sometimes it rolls over in all directions, as if to let us see that it is subspherical, not discoid. And now and then it takes a sudden spring sidewise, to a distance perhaps twenty times its diameter, when it spins as before, or else skips about several times in succession. Truly, this miniature world is more wonderful than the shoals of whales in Baffin's Bay, or the herds of elephants in the forests of Ceylon.

* Gosse's Leaves.

AMERICAN EDUCATIONAL MONTHLY.

SEPTEMBER, 1865.

SUPERLATIVES AND SCHOOL BOOKS.

EITHER the school-book makers of the present day have become great geniuses, and their works have become amazingly perfect, or the educational journals of this country, and the reviewers of school text-books, are guilty of great wrong. Books which seem to us most indifferent and imperfect, are spoken of with a rapturous ecstasy scarcely dignified or permissible even if Shakespeare's plays or Homer's poetry were the theme. Every volume reviewed is represented to be so singularly and unexceptionally good, its style is so pure, its details are so well selected, its superiority to all others is so evident and marked, that we are driven to ask where all the bad books go to, and how is it that none of them are heard of. For, with every disposition to think well of American authors and school-book makers, we cannot believe that there are no dunces or pretenders left, or that none of them rush into print.

To our editors and reviewers every book which is presented to them seems "destined to supersede all others;" will be "appreciated and used by every teacher and pupil in the land;" "supplies a void;" and is "bound to work out a great revolution," etc. In short, that every book is "really a most remarkable production" is as much a matter of course, as that Mr. John Bull is the most remarkable man in England.

Some are not satisfied with heaping superlatives upon the books. They go further, and bespatter the authors and publishers personally with stereotyped compliments. They enlarge upon their "philanthropic motives," and upon their

labors "in the cause of humanity;" and the emotions which their works excite are dwelt upon with the minuteness and enthusiasm of an impulsive boarding-school girl, when writing to her sentimental friend.

Now, if it is the primary object of our educational journals and school-book reviewers to flatter authors and put money in publishers' pockets, then all this is very well. But we contend that this dead level of approval, uniform as an assembly of Quakers, and vapid as *cau sucrée*, is most damaging to the best interests of education, and is demoralizing to author, publisher, teacher, and pupil.

As long as the relations of school-book publishers and educational editors maintain their present status; as long as the parties of the first part continue rich and powerful, and the parties of the second part poor, and hence weak and time-serving, so long shall we be likely to have "golden opinions" of all books published, good, bad, and indifferent. The editor and reviewer may know the truth, but he will fear to make it known to his readers, lest the more fortunate publishers shall frown upon him and withdraw their favors.

One of the primary objects of the projectors of the AMERICAN EDUCATIONAL MONTHLY was to give free, intelligent, and candid opinions of text-books, without regard to the profits or feelings of the authors and publishers of said books. We were confident that we could not do a greater service to the cause of education than by pursuing this course. Though our friends have already given us great credit for independence of position and freedom of expression, yet we must confess that our plans have not been as fully and as rapidly developed in this direction as we anticipated.

We just begin to learn what obstacles are in the way. No one man is qualified to review all the books which are offered.

we send certain books to certain who are known to be well qualified to judge the merits and demerits of the certain books. Then other books, other subjects, are sent to other men who have made such subjects their peculiar

Yet we find that many of our writers are too friendly, too charitable, too lenient. Exactly whom to blame is a problem not easily solved.

However, as our plans mature, our readers will be sure to observe that it is our duty to speak of books as their merits or demerits. If we commend, we shall do it when books are worthy of commendation; and when we criticise, we shall do so with truth and sincerity.

PRINCIPLES AND PROGRESS.

The mutual relations of the parent, the pupil, and the teacher, have recently been discussed in various quarters with considerable interest. Even the most practical and uninteresting of these have contained useful hints and reminders, some of which we condense to the form of axioms. Education is not the first agent, in order of importance, in the formation of character.

Children are under restraint by diet and exercise; so that moral training is, in a sense, begun in infancy.

The teacher has to win the love of the child, but parents take it and control

Teachers keenly feel the action of their influence upon children, and regret their teaching thereby.

Bad workmen complain of their tools. It is a suspicious circumstance when a teacher complains of the bad boys to deal with. Boys are about the same in most schools.

Teachers are in the invidious position of being in their own cause, and are somewhat jealous of appeal against their de-

cisions. True painstaking teachers will delight to listen to reason from boys, and will not fear appeals against their judgment any more than legal judges fear appeals to higher courts.

The controlling principle is love. The whole theory of the stick is involved here.

A child badly brought up is a difficulty with teachers—he has to be taught and untaught and retaught. The plain remedy for his badness is to begin anew.

Punishment teaches nothing.

Penalties are rendered needful from their own defects.

With an idle boy, let him be educated to habits of industry suited to his capacity, led on by any thing in which he does show an interest, encouraged for every success, and we shall find that “nothing succeeds like success.”

With an untruthful boy, trust him, but with eyes open, and you do much to make him truthful. Punishment for reformation's sake ought to be suited and proportioned to the offense—a condition which the stick does not fulfill.

Teaching is the process by which occasions for intellectual activity and for knowledge are presented to the intellect.

Intellectual instruction is that intellectual activity and knowledge occasioned by teaching.

The first principle in teaching is, that external objects must be presented to the senses, so as to occasion perceptions of the external world, or exercise the presentative powers.

The representative powers depend on the previous activity of the presentative powers.

Generalization depends on the activity of earlier processes, and is the basis of what is termed intuition.

Principles of instruction may be learned and applied like any other fixed principles.

Of these and similar "first principles" it is well to be reminded. But, while refraining alike from a merely superficial gaze and from a fixed watching of favorite points, we need an earnest, steady view of the entire field of education. Truly is it said, that in order to a correct understanding of the nature and importance of education, we must lose sight of individuals, and look at men in masses and for periods of time. It is only in this way that we can see the full force and influence of the various elements at work in building up and fashioning individual character. Whatever has tended to improve or ameliorate the condition of man, whatever has exerted an abiding influence upon a people or race, belongs to education. It is by marking the gradual advance of civilization, from the earliest dawn of history to the present time, and noting the various circumstances that may have tended to further or retard its progress, that we obtain a truer view of the character of education. The utility of axioms and principles in a disciplinary course is conceded by all; similar requisites in a more immediately practical course are obvious. But the relative importance of these principles, the comparative value of the various requisites, the proportions in which theories and facts are to be united, the manner in which they can be made to interweave, to blend, to coalesce, will depend in a great degree on circumstances of comparatively local interest, on events arising in social and political life, in the various mutations of human destiny. The foundation-stones of education are quarried during the crash of revolutions, and a substantial system must have some fallen dynasty at its base.

PEDAGOGICAL LAW.

THE first article on "Pedagogical Law" was published in the March

number of the "MONTHLY." The contents of that article were: "A brief Introduction; Parent and Child; the Duty of Parents; the Foundation of Parental Rights; the Power of Parents among the Jews, Persians, Egyptians, Greeks, Gauls, and Romans; Exposing Children; the Hindoos; the First Emigrants to Massachusetts; the Extent of Parental Authority at present in England and America; Teacher and Pupil; the Teacher *in loco Parentis*; the English Law as to Corporeal Punishment; the American Law on the same Subject; Examples in which a Teacher was Justified by the Courts; the Danger in Punishing to Excess."

The second article is given in this number. The law as to whether a teacher has a right to punish for misbehavior on the way to or from school, will probably constitute the third paper.

These articles are prepared for us by a distinguished member of the New York bar, who has access to the best law libraries in the country, and is indefatigable in his researches. It is now more than a year since he commenced his labors, and a mass of matter is accumulating on his hands, all of which will be reduced to system and given to our readers in such a shape as will, it is hoped, enable teachers to arrive at a correct understanding of their legal rights, powers, duties, and responsibilities. We believe that such an understanding is of the highest importance to the practical teacher for various reasons, but especially because it will, more than any other one thing, increase his usefulness, and enhance his pleasures, by enabling him to act under trying circumstances with that manly confidence which inspires respect, and gives dignity, importance, and success to its possessors. Those who take the "MONTHLY" this year and next will probably have all these articles. They are obtained at great expense, and will be published by us exclusively. We shall thank our read-

detailed information of trials and cases of the courts on matters pertaining to teachers. We have already received several letters from persons whose names we shall give hereafter; and we shall esteem the favors of all who aid us. Our object is to collect probably more than a thousand laws, and arrange in systematic order, the laws of general application now in relating to teachers; and to submit so arranged to our readers. It is the expectation of fully accomplishing our object, that we hazard the opinion that no teacher in the land can afford to

be without these articles on "Pedagogical Law." They will add to his literary attainments a clear comprehension of what are his legal rights; and thus relieve his mind of that harassing uncertainty, and that painful fear of humiliation, which, in all avocations, burden the lives and disappoint the purposes of those who do not know their rights. Every teacher's rights are in his own keeping; let him know them, and under no circumstances can he act timidly, taking counsel of his doubts and fears, but rather, as becomes his station, wisely, and with dignity, determination, and safety.

EDITORIAL CORRESPONDENCE.

HALLE, Prussia, August 3, 1865.

HALLE is not only noted for its university, but for that immense system or system of schools which the good and pious king established about 1700, and which even under a general name, equivalent term "orphan asylum." This institution which began with a mere handful of money, and with a mere meagre contribution, in 1694 or thereabout, in a private house, has expanded into a gigantic union of schools, giving employment to a hundred and forty teachers, and is in charge more than thirty-three hundred children. And as it now stands in the first rank of German educational institutions, I have, during my stay in Halle, been myself in gathering there what hints touching German education. And in a loose form, I will try to convey in a letter.

Of this asylum-school I will say, first, it is a little world in itself. You may conceive what must be the necessary accommodations for the following departments: School-rooms for thirty-three hundred scholars; rooms for a hundred and thirty scholars; rooms for nearly a hundred children of families of rank; rooms for some hundreds of other children who are sent from more humble homes, as we send our children away to a boarding-school; a hall where hundreds dine together, and the kitchen belonging thereto; a large library; a hall where many of the teachers live; a gymnasium (in the American use of

the word); a printing-house for Bibles; the printing-house of the establishment; the bookstore, apothecary's department, and the hospital. By no illustration which I can draw from America can I convey an idea of the immense extent of the buildings, and the display which they make. I am filled with wonder every time I look at them; and not more at the greatness and power of the institution as it now stands, than at the remarkable display of faith in God which its founder had, who ventured to go forward and make his plans to build the immense structure, after the unexpected gift, from an unknown friend, of three dollars and fifty cents of our money. When the boys go by in the morning at eight o'clock, passing, as they have to, under my window, it seems like an army of *infantry* on the march; and when they come pouring out at the hours of dismissal, it is the greatest display of boy and girl life with which I am acquainted.

I have jotted down some items of which I will speak, not connectedly, but separately, in which I think Americans will be interested. And these shall be drawn, not alone from this school, but from many; only, here I will state them in a generalized way. I will only say in advance, that I do not find that superiority in the German schools over our own, which one might expect to find. Doubtless there are, and *indeed* there are, minor points in which theirs excel ours; but the German schools have been, it seems to me, greatly overrated. But let this appear

from the special details which I will present. And first let me speak of

DISCIPLINING BY PUNISHMENT.

If in an American school, with our newspapers argus-eyed to see every thing and report it to the world, the violence which takes place in a German school should occur, it would create such deep feeling in the community that nothing short of the removal of teachers would quiet it. Of course, before the visitor this violence is not apparent; yet I have seen a boy struck with the clenched fist on the side of the head with benumbing force; and I know that the teachers kick the boys, and strike the head, and snap the nose, and pinch the back of the neck in a brutal manner. If German schools are of such superior excellence, it is gained not by the help, but in spite of a system of such gross and injurious punishments, as are not only hurtful to the health, but to the character of pupils and teachers. Well considered, faithful punishings on the hand are not in vogue here; only passionate outbreaks of violence, which generally accomplish their object by blows on the side of the head. And, of course, they are constantly occurring, and the teacher is seen every few minutes darting at some unoffending boy, maltreating him, and letting the lad, looking as demure as possible to soften the teacher's heart, slip away to his seat again, soon to be in danger of the same barbarous penalty. And this leads me to speak of

ORDER IN THE SCHOOLS OF GERMANY.

And this, in truth, as is the case in almost every European school that I have seen, is most defective. No school of respectable order have I seen in Ireland, or England, or Germany. No one of those things which we either strictly enforce under the sanctions of law, or develop under the guidance of duty, are here attended to. Prompting is open and shameless; whispering is universal; playing is general; and the teachers are ever sending forth their unceasing hiss, the signal for order, which hardly commands even momentary silence. I have known of boys fighting in school three successive rounds, while the teacher's back is turned; and the noise, which is almost always heard in a room of boys and girls, would be most distressing and distracting to an American teacher. With the higher classes in the gymnasium of course it is different; for when boys have reached the age of eighteen or nineteen they have lost that restlessness which characterizes childhood, and sit quietly without the enforcement of law. It would amuse any one of my readers to see the close of a German school: the bell strikes while the teacher is giving instruction; in an instant all spring, and become like wild beasts who have scented blood. The impatience to leave the room becomes so great that, could you see them, you would never

speak contemptuously again of "lethargic Germany." In a minute the teacher closes his instructions, merely ending his sentence; and in a moment, quicker than I can tell you, all have sprung toward the door, clambering over seats for the most part, with caps on their heads; and you believe that what Goethe called the Sturm and Drang period has come again. Certainly if the German schools are so great, I must confess that their noise and disorder are also great.

METHOD OF INSTRUCTION.

The method of instruction in this country has one great merit, and one great demerit, which last, however, is offset by one equally great with us. The merit is, that educators devote a great share of their efforts to a natural method of study: to such a course as calls into play the mental faculties in the order of their natural development. From the infant schools, where nothing is taught excepting singing and subjecting to authority, up to the highest classes in the gymnasias, where passages from Thucydides and Tacitus are analyzed with the utmost exactness, the course of education moves on, conformably to the gradual awakening of a child's nature. And herein is the great merit of the Pestalozzian system; and the art of instruction here is the carrying of a true philosophy of the mind into the school-room, securing admirable practical results of the highest importance. Did space allow I should be glad to illustrate this. And the demerit of which I spoke, and which is equaled by one with us, is the prominence which is given to the memory and to matters which must be committed to it. With us this is done from the book; with the Germans, from oral instruction, or what may be called familiar lectures. We assign our children lessons which are to be learned by heart, and then give them time to study them; the Germans allow little time for study, but a class is "lectured" nearly all the time. Look into a room with me for a moment. Here you have one class out of eleven or twelve, which make up what we should call a high-school—the Germans call it a Real or practical school. The room is hot and entirely unventilated—two universal evils in German schools. The seats are mere benches, the only back being the bench on which the boys behind lay their books. Rude and primitive as the benches of an American college, are the seats of a German school. At eight o'clock in the morning the wild disorder softens down, and when the teacher comes in there is a tolerable degree of stillness. Rather, I should say, a *tolerable* degree of confusion, that no good American teacher would bear for an instant. The first hour to-day is given to religion, let us suppose, as is the case there twice a week. The Germans use this word in a manner which, were it not so solemn, would in our ears be

is. "Do you take religion?" asks man lad of another. "To teach re-
"to neglect religion," "to attend to,"
and "to get religion," are terms of
ous meaning to an American in Ger-
ill he learns that by "religion" is
meant the catechism approved by
ernment. Well, the boys "take re-
for an hour, and then there is a
ig spell of five minutes, which shows
the terrific disorder, that the "re-
communicated has not brought any
influences to bear upon the young
ent spirits. Then another teacher
s, and he lectures the children for an
topics of general geography; not
them recite a lesson from a book,
ing, and then reviewing the ground
uestions. And thus geography is
to the younger children, though the
asses study it topically, gathering
ts from what books they can. They
commit from a text-book, as is the
l way with us. Their topical
we have in our best schools, and
ethod of teaching by oral lectures
nearly as good as ours of committing
memory from a text-book. The
hy of our country is strangely
d. The map of the United States is
e end of the atlas—next to that of
ia, and beyond that of Africa. The
signed us in the geography is not
ore honorable. Much is said about
pper-colored" inhabitants of America,
is not strange that the Germans be-
at the Indians are a power yet, and
y wonder so at seeing a "born
n" who is as white and well-dressed
selves. Their American statistics,
e been all out of date till this war
d compelled them, and indeed all
to confess that if we had boasted
f our civilization and our greatness
the best reasons in the world for

the geography comes another little
five minutes' turbulence, and there-
ading; then another recess of five
, and the fourth and last hour of the
which may be claimed by Latin, or
or arithmetic, or writing, or history,
ing, or grammar. Latin is taught
universally; French has a promi-
ow, which is slowly, but surely,
to the claims of the English lan-
but whatever is taught is taught
holly by oral instruction, instead of
ent study of text-books. Seeing the
a class is reciting *all* the time, one
when they *study*, and is only satis-
m he finds that they never study at
ept at home in the evening; that
the school-hours there is a perpetual
of pouring in oral instruction into
of the children. Thus it comes that
man children's minds are overlaid
owledge; they receive so much that

they can not digest it all; and the praise for
erudition which they receive is just as ill-
timed as it would be to extol a man for the
amount which he eats on Thanksgiving-day.
Nor are German schools free from that curse
of our American ones, a great number of
studies pursued at the same time. The list
of subjects at which children work here at
once is as large as at a superficial country
academy in America.

But here I must end for this time, and
shall hope to renew the subject in a future
letter.
W. L. G.

NEW YORK, August 1, 1865.

MUSIC IN THE NEW YORK PUBLIC SCHOOLS.

THAT vocal music may be taught in our
public schools is a fact that must gratify
the friends of youth; that it is not taught care-
fully and conscientiously is a notorious fact,
and one that grieves many lovers of music.
The compositions presented to the children
are mostly of the most trivial and unimproving
character.

Visiting lately the male department of
one of our most celebrated grammar-schools,
we were present during the hour that the
professor of music was at his post. The boys
were made to sing "America," "Columbia
the Gem of the Ocean," "Hail Columbia,"
"Tramp, Tramp," "*John Brown's Body*,"
"*Baylon is Fullen*," and "*Wake, Nicodemus*."
Not one word was said about notes, not a
single scale was sung; in fact any person
who could play the above tunes would have
been just as competent as the professor was.

Another school that we know of is prepar-
ing for an exhibition, and the principal mu-
sical points of the programme are to consist
of "Johnny Schmoker," and "Three Blind
Mice." These are not primary schools, but
grammar-schools.

Music should occupy a dignified position
in our schools. At every music lesson some
time should be devoted to notes and to the
practice of vocal exercises. The harshness
with which the boys are allowed and encour-
aged to sing is as reprehensible as it is un-
necessary. Many persons have the most
erroneous ideas in relation to the tone of
boys' voices. Boys' voices should be culti-
vated to sing softly and sweetly. Our
school-boys are not taught to *sing*, but are
allowed to scream in the harshest and most
unpleasant manner. It is time that the
music in our schools should be looked after
with more care by the school officers; that
better results should be demanded. We
would suggest to non-musical school trustees
the following hints. When you hear the
boys sing, and the effect is to make your
head ache, take it for granted that they are
not properly trained as regards *tone*. When
you hear them sing *nothing* but tunes that
every one whistles around the streets, you
can be certain that they are not properly

trained as regards *tune*. Another hint: the boys can sing just as sweetly as the girls, if properly taught; and the quality of tone would be sweeter. Be as particular to have good musical composition taught as you are to have good school text-books used, and we can ask nothing more in that particular.

F. GILDER.

SOUTH BLOOMFIELD, O.,
August 5, 1865.

MR. EDITOR—I noticed in the July number of your journal, an article entitled "Tachygraphy versus Phonography," in which the writer denounces Phonography, and would fain make the uninitiated believe that it is not what it has been represented to be, and that it has *almost gone out of use*, etc., and that *Tachygraphy* is much simpler than Phonography, much more legible, and much more easily learned; and that Phonographic teachers are everywhere laying aside Phonography, and learning and teaching Tachygraphy.

I have been a phonographer for seventeen years, and instead of my laying it aside, I use it almost daily, with great profit and satisfaction, in reporting sermons, speeches, etc., and in keeping various memoranda, and for many other purposes, besides corresponding

with quite a number who understand the art and delight in its beauties.

We think your nameless correspondent expresses himself too strongly in his remarks against Phonography, in view of the many recommendations that have been given in its favor from year to year, by ministers, teachers, and other prominent persons who have learned and tested its merits. Have they all been mistaken? and is Phonography, which has been so eulogized by the press, and by the best men in our country for more than twenty years, really dead? We have abundant proof to the contrary, and can show that Phonography, instead of having fallen into disuse, is steadily gaining ground, and is being introduced into most of the best commercial colleges, as well as into other schools and colleges.

If Tachygraphy is being adopted by Phonographic teachers *everywhere*, we were not before apprised of the fact. As I know nothing of the art, having never before heard there was such a thing, I will not dispute any thing your correspondent has said in its favor; but if it is *so much* superior to Phonography, I will hail it with delight, and shall learn the art and teach it to others. If it is a failure, I shall expose it.

J. G. ADRI.

EDUCATIONAL INTELLIGENCE.

NEW YORK.—The statement made in the daily papers in respect to the contributions to the New York Union Theological Seminary was not complete. Messrs. James and John A. Brown give \$25,000 to found the Professorship of Hebrew and the cognate languages; Mr. John C. Baldwin gives \$20,000, of which the sum of \$10,000, with \$15,000 given previously, founds the Professorship of Biblical Literature; Mr. Joseph Howland, of Matteawan, New York, gives \$10,000; Professor S. F. B. Morse gives \$10,000, and founds the Lectureship on the Relations of the Bible to the Sciences; Mr. Zebulon S. Ely gives \$10,000, and founds the Lectureship on the Evidences of Christianity; Mr. William E. Dodge gives \$12,500, and Mr. Winthrop S. Gilman, \$5,000. One subscription of \$3,000, one of \$2,500, nine of \$2,000 each, and seventeen of \$1,000 each, besides numerous smaller subscriptions, are to be added, making the full amount of \$150,000.

—Miss Maria Mitchell has been appointed Astronomical Professor in the Vassar Female College, Poughkeepsie—the only known instance of a lady's holding such a position. Miss Mitchell is the discoverer of a comet which bears her name.

MASSACHUSETTS.—Harvard College is at last separated from the State. The law passed by the Legislature provides that the overseers shall be elected annually, and that the alumni, regular and honorary, shall have the right to vote for them, except that no alumnus can vote until five years after his graduation. No member of the faculty or the corporation can be chosen overseer. The Governor and other State officers are no longer ex-officio members of the board.

NEW JERSEY.—The Board of Trustees of the New Jersey Classical and Scientific Institution at Hightstown, have decided to purchase a lot situated upon Main-street for the erection of the buildings. It is said to be decidedly the most eligible, as well as the most desirable site for the institution, in the whole neighborhood. The buildings are to be commenced at once, and will be large and commodious.

MARYLAND.—The new School Law has some novel features, and their workings will be watched with interest. The number of school officers is far less than under the township or district system, which is in vogue in every other State, and this may prove an advantage. The county commissioners, receiving compensation for their

as, and liable to removal for neglect, will naturally take more interest in the prosperity of their schools than unpaid responsible persons. The school officer, all appointed, the difficulty often arises from forcing partisan issues and actions determining the welfare of the schools, is obviated.

ADA.—The Council of Public Instruction has withdrawn its sanction to the use of the *Geography* in any of the public schools of Upper Canada. Hereafter it will be lawful (after the copies now in actual use in any school are worn out) to use either the *Geography* or any other American geography for the Grammar or Common Schools in Upper Canada. A violation of this order, in any case, will subject the school committee to the loss of its share in the Grammar School Fund or Legislative School

ISLAND.—Both the universities have addressed on the American assassinations. That from Oxford has been acknowledged by Mr. Adams.

MANY.—The Fourteenth Congress of schoolmasters of Germany has just been held at Mannheim. Among the questions discussed were, the best methods of development in children; the means of instilling in them a love of country; the advantages resulting from a larger share given to gymnastic exercises in education; the study of music, especially of national songs; the necessity of teaching history, with the greatest care, the history of our country, and especially the great events and victories of the German people. There are now in the different German states sixty-three educational periodicals.

LY.—The king of Italy has issued a decree, enacting that all the colleges of the kingdom shall bear the name of some celebrated philosopher or writer of the locality in which they are situated.

INDIA.—Both among the Hindoos and Christians a decided beginning has been made in the education of their girls. At the Conclusion of the University of Bombay for awarding degrees, it was stated that 109 out of 120 candidates passed the matriculation examination, of whom 86 were Hindoos, 19 Christians, 2 Portuguese, 1 European, and 1 African. Of 32 candidates, 15 passed the first examination in arts; of 20 candidates for degree of bachelor of arts, 15 passed the examination; and 2 Parsee candidates passed the examination for the degree of master of arts. Mr. Premchund Roychund, who has been given \$100,000 to the Calcutta University, has given a like sum to the Bombay University, toward the erection of a library, and further sum of \$100,000, "toward the construction of a tower, to contain a large clock and a pair of bells."

FRANCE.—*A Town Council's Reasons for making Elementary Instruction Gratuitous.*

—While the propriety of making elementary instruction both gratuitous and obligatory throughout France is being discussed, local authorities are, in ever increasing numbers, taking the initiative, by making it gratuitous in their own districts. Here are the reasons for that step, minuted by the town council of Rambervilliers, department of Vosges: "With a view to public order, and to the well-being both of the community and of the individual, it is desirable that elementary instruction should be within the reach of all. Complete gratuitousness is the effectual means of attaining this end. In towns even of moderate size, it is exceedingly difficult to draw the line of demarcation between that indigence which should entitle the family to gratuitous instruction, and that sufficiency to which it should be denied. In crowded populations, such as that of Rambervilliers, not only are the indigent unusually numerous, but there are a great many artisans, subordinate officials, and small tradesmen, who conceal their straitened circumstances out of honorable pride, and make relatively large sacrifices in order not to be ranked in the pauper class. The gratuitousness of elementary instruction for all, is a pecuniary relief to the greater number, a shield to the honorable pride of those who occupy the border territory between competence and indigence, and a protection to honest poverty, in one point, at any rate, against the invidious distinctions of fortune. In making elementary instruction gratuitous, the town sacrifices only the school pence, of which the annual average is £28, a twelfth part of the annual expense on account of elementary instruction. On the other hand, to adopt this measure is to anticipate the generous intentions of the imperial government in behalf of the masses, to exhibit civil equality, and to take away all excuse for the negligence of parents in not sending their children to school."

DENMARK.—*Misguided Patriotism.*—Primary instruction, universally diffused though it be, is at present in some danger from the want of trained teachers; said want arising from nothing but the inadequacy of the remuneration offered. A few years ago, as many as fifty teachers agreed to resign their posts, and emigrate in a body to America; and since then, situations, for which teachers with a normal school diploma were sought in vain, have been given away to self-taught men. In the higher schools a great effort is being made to strengthen the national sentiment, by teaching with emphasis the national history. In one of these schools particularly, established some years ago by a very popular clergyman, not any foreign language is taught, that the whole mind and heart of the pupils may be devoted to national subjects.

CURRENT PUBLICATIONS.

It is a pleasant thing, in taking up a new work, especially if it is of a scientific character, to find that its author thoroughly understands his subject, and can clearly convey his meaning to his readers in an interesting and suggestive manner. This remark applies to Dr. Lambert's new book on Human Physiology, Anatomy, and Hygiene,¹ which we confess to have opened with a strong prejudice against all popular treatises and text-books on these subjects; arising from the fact that generally they are dry epitomes or meretricious catch-pennies. We find it to be, however, a clear, comprehensive, well-arranged, and very suggestive *résumé* of the most important facts desirable to be known concerning the human frame, and the proper control and preservation of its various functions. Its *unique* feature is the complete and careful exhibition of the whole subject, by means of a well-digested Analytic and Synthetic arrangement, which is evidently the outcropping of the author's own thought and experience as a teacher, for the last quarter of a century. To us, this is the charm and the chief value of the book. "Life is short, and Art is long;" and condensation, conjoined with comprehensiveness, is the *necessity* of all learning and study in these latter days.

Dr. L.'s work is fresh; piquantly and nervously written, frequently interspersed with valuable suggestive remarks on topics pertaining to our every-day life, making us feel that it was written to stimulate as well as to satisfy thought.

We regret to see the book made an advertisement for any particular sewing-machine, or cooking-range manufacturers (see pp. 412-414). Although the articles in question are the best of their kind, they here are out of place.

The book is handsomely printed, on good paper, and copiously illustrated with some three hundred fine wood-cuts; forming a valuable text-book for the use of schools, or the amateur reader. The medical student and practitioner also, will not be justified in looking askance upon it as a mere popular treatise, since there is in it much food for thought, even to those who have gone over the whole ground before. An edition without the foot-notes has been prepared, which is well adapted for library use.

Every one who has succeeded in giving clear notions of algebra to beginners will readily concede that he has met with his

greatest difficulty in the very first steps—in the transition from arithmetic to algebra. "Tell me what a , b , c , x , y , and z mean, and I can then understand the rest," is the honest expression of every tyro. At this point, too, usually commences that disgust which finally expresses itself by saying, "I have no talent for mathematics. I like the classics, but I can not comprehend the signs and symbols and ghostly formulas which meet me on every page of my algebra." In fact, algebra, rightly taught, becomes of itself a language; its parts are to be construed, its symbols translated, and its formulas turned into good English. It ought to find its warmest advocates among the lovers of language.

More loss may be sustained, the very first week of the pupil's course, than can be retrieved in a whole lifetime. To tell the learner that "algebra is that branch of mathematics in which the operations are indicated by signs or symbols, and the quantities are represented by letters," is as intelligible to him as the oracular utterance of the physician who informs his illiterate patient that "the first diagnosis of his case indicates the necessity of phlebotomy." The pupil is too timid to say he does not understand so clear a definition, particularly as the teacher seems to think nothing of it. But "light" is in store for him. He immediately finds that the first letters of the alphabet represent *known* quantities, while the last letters represent *unknown*. Mark his progress. Here is something tangible. Tell him that an estate valued at a dollars has fallen to him, and you interest him because it is a matter personal to himself. He begins to look for income, and is informed that this handsome sum, put at interest at b per cent., will yield him annually the nice sum of c dollars. You wait for a response, at least, in an irrepressible glow of his countenance, at such good fortune. Of course, he smiles; he dare not say that he does not *know* so simple a letter as a —the first letter of the alphabet, too—the representative of a *known* quantity. What else can he do but smile in token of what he now *knows*, especially as it pertains to his own personal welfare? But down in the depths of his mind—not very deep either—he says, *I do wish I knew what a , b , and c really mean*. He scarcely ventures to utter it, yet he can but wonder how much more perplexed he is soon to be when he comes to the *real* unknown quantities— x , y , and z ; and inwardly congratulates himself that his income was not announced in such unintelligible terms as these. The truth is, he has been accustomed only to the *definite* symbols, 1, 2, 3, 4, etc., to which *one* and *only one* value is attached. The symbol 5 is *known*; because it everywhere means

(1) *SYSTEMATIC HUMAN PHYSIOLOGY, ANATOMY, AND HYGIENE*; being an Analysis and Synthesis of the Human System, with practical conclusions. With many new and complete illustrations. By T. S. LAMBERT, M. D. New York: William Wood & Co., 1865. 12mo, pp. 420. \$1.25.

AMERICAN EDUCATIONAL MONTHLY.

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ESSENTIALS FOR A SUCCESSFUL TEACHER.

the recent commencement exercises of the New Jersey State Normal School, at Trenton, the Reverend W. H. Bell, D. D., President of Rutgers College, addressed the graduating class in a paper appropriate for teachers in every age.

He said, in his introductory remarks, "The relations which we sustain to the world, and which they, in turn, sustain to us, and which they, in turn, sustain to the world, together with the varied duties which result from these relations, must all be performed before our corresponding duties can be done. Now nearly all this knowledge is traditional—that is, it is gained, if at all, by being handed down from one generation to another. What one has gained by study, or another by original investigation, all goes to swell the general sum of knowledge; and this, with its constant mutations, is to be handed down by tradition unto the next, in order that the succeeding generation may act its part better than its predecessor, and do perfectly the duty which God has assigned to it. Unto every generation it is said, in trumpet tones, 'Freely ye have received, freely give.' Popular education, a very idea, recognizes the obligation resting on a generation to communicate its knowledge it has and can get, in order to fit the future race of men for action, in the most extensive sense of the word, may comprehend every preparation that is made in our youth for the life of our lives;" and the public is to make all preparation that the se-

quel of the lives of our youth shall be such as it ought. One must not be allowed to come into life and go without, or get unaided and as best he can, the knowledge which he needs. All experience shows that this would be to send the race back again to barbarism. The firm conviction of all enlightened men and governments is, that public provision must be made to communicate all necessary knowledge, and in the easiest and best way. Hence, the class of persons called teachers has arisen. And a more important and honorable class of men and women does not exist on earth, since their work is—and they are doing it nobly—to prepare man to know and act well his part in life.

He then proceeded to discuss, in his well-known forcible style, some of those elements of character which have, in the past, given success to the labors of the teacher, and in the possession of which the teacher of to-day may go forth hopefully unto his work.

A THIRST FOR KNOWLEDGE.

Appreciating the end of his own being, the teacher himself wishes to *know*, that he *may do*. It is not merely knowledge for itself, for the mere sake of knowing, which is desired. This would be mere curiosity, which is by no means an elevated feeling. If one knew all the languages into which Babel has cleft the earth, and were that the end of his acquisition, a day laborer, with a very moderate share of knowledge of his mother tongue, but who

took the well-being of others into his thoughts and feelings, his plans and ends, would be not only a better man in the moral aspects of the question, but also a better educated man, in the true sense of the word education. Nor is the knowledge sought because, by the acquisition, its possessor can become rich and powerful. This is mere selfishness, which is a base and sordid feeling; and wherever it gets the mastery it renders a man so consciously base that, self-condemned, he excludes himself, as unworthy, from the society and converse of men of eminent virtue and philanthropy. But the thirst for knowledge, which the good can approve, is his who, while he does not ignore self, or seek to be better than our Lord required, since he commands us to love our neighbor *as ourselves*, nevertheless wishes to know *much* in order that he may do *more*, which will be beneficial unto others.

In a word, then, the successful teacher must first have become a successful scholar. He must, in some way or other, have learned the lesson, and learned it thoroughly, that a man is not his own, having no relations or affinities to others. He is placed here to be rain and sunshine, fresh air and fragrance, food and flowers, any thing and every thing that is good and beautiful, consolatory and strengthening, reforming and purifying, unto every one that needs his help and unto whom he is able to render it. Let this big thought come down into the soul (and what contractibility of heart must first have been overcome before this thought could find room in these shriveled, shrunken souls of ours)—let this big thought, I say, come down into the soul, and it converts the man at once into a most diligent learner. What must I do, and how can my duty be best done? are now the life-questions which are ever asked, and unto which ready answers are also ever vouchsafed; for here he who asks receives, and he who seeks finds. And now, on the strength of the answers, you find him diligently prosecuting his work of preparation for future usefulness. Grammar, Geography, Mathematics, Natural Sciences, Mental or Moral Philosophy, Latin or Greek, French or German, whatever it be whereby his use-

fulness can be promoted, is pursued. Early and late you employed, and no figure of speech so forcibly before us the desire prompts his action, as that just when we spoke of a *thirst* for

Now put the young man who through such experiences in room, and would you not succeed? Can you be near a get warm? Shall the sun shine not flee away? Shall a year pass before you day by day in room, who has consecrated his good of the children to a life bearing their perverseness as a disease, and manifesting an unconcern for the welfare of her pupils, coming more fragrant to their nostrils than perfumes and spices to natural organs? Before such a unwillingness to study this sun would pass away as soon as the teacher, fortified by her own example, had taken hold of the heart of the pupil, and comprehended wholly that any study was to be pursued according as it was fit him better and more useful.

It is back of the school-room success may be gained, that the secret of that success was laid. In the chamber, where seen only by the devoted himself to a life of seclusion the distant rural school-house, many and almost insurmountable ties, he prosecuted his studies in the rooms of this noble institution with industry and regard for every thing seemly and good, has made him most a proverb,—in these spots success was gained. Here he has sown and remained for him was to go for his harvest.

A LOVE FOR COMMUNICATING

This, in the most of successful teachers, is, in a greater or less degree, a gift. They are born teachers. They knew when they did not love to teach. But this gift is also susceptible of cultivation; and under those influences, of which I have already

energy, and persistence to the knowledge, this love for communication becomes so intense day meal will often be negative pleasure of imparting. This it is that takes from the now all that gloom and horror the rule of some pedagogical as it appear as if it were mourning. Under the smiles of him who loves to teach, som becomes to the pupil a sant and useful pursuits, and bering of difficulties; the birth-ht hopes and aspirations, and hich memory, in after years, k with a pure and serene joy. fied I am that the success of in the highest sense of his is on his own thirst for knowl- love for communicating, that mining a teacher with a view ment, I should question him st fully on these two points; right here, I should feel that le reason to fear any deficien- to mere book-learning. But nd that a hireling, an impos- to be examined, a man or— ot in Gath!—a woman, who children nor loved to teach d expect to find him deficient ere learning of books; and I assuredly try to find out his f he had any, and with heart- l see him turn his back—and good-will would help to turn the school-house of my or strict. For if there is any rt of the immediate frown of more than another a parent e, it is the subjection of his he tyrannous, soul-shriveling n or a woman, who, for six lay, and for six days of the his care—care indeed! Oh,

sad misnomer!—the susceptible minds of children, to train them to the love and pursuit of those things which he himself hates.

APTFNESS TO TEACH

Is the last element of the character of the successful teacher which I shall name.

It has been said "that what we know thoroughly we can usually express clearly, since ideas will supply words." If this statement is correct—and I believe it is—then our teacher, with his thirst for knowledge and his love of communicating it, will almost of necessity fall into an easy, simple, clear method of communicating his thoughts, which will make teaching as natural and easy as the putting on of an old glove. There will also be such a hearty sympathy between him and his pupils that, almost by intuition, he will see what is needed to make the lesson of to-day clearer and more impressive; and what was seen to be deficient to-day, the zeal and intelligence of the teacher will supply to-morrow. I never, indeed, knew a really hearty teacher who did not thus become apt to teach. I have known those who, at first, were slow of speech, and through diffidence hesitated much; at times, too, thoughts were given forth confusedly, and hence they failed at first to interest the children. But these difficulties soon disappeared before the zeal and industry of the teacher, who loved his work, and was resolved to succeed. He who himself thirsts for knowledge soon learns that right methods of study are essential to progress; that there is also a right and a wrong way of putting things, and that, when the right method is used, instruction glides gently into the understanding, wins the love of the heart, and then calls forth the prompt activities of the will. The whole man in the scholar awaits the bidding of the earnest, intelligent, loving teacher.

rd College roll of honor con- nes of three major-generals, r-generals, thirty-seven colo- n majors, one hundred cap- -six lieutenants, one hundred

and twenty-seven medical officers, sixty-eight chaplains, twenty-one paymasters, six naval officers, eighty-one privates and non-commissioned officers, besides a large number whose latest rank is not yet known.

PEDAGOGICAL LAW.

III.

PUNISHING FOR MISCONDUCT OUT OF SCHOOL.

WHEN the late Hon. John C. Spencer—a gentleman of such eminent legal ability that he had scarcely a peer at the New York bar—was Superintendent of Schools for the State of New York, he is said to have given the following opinion: The authority of the teacher to punish his scholars extends to acts done in the school-room, or play-ground, only; and he has no legal right to punish for improper or disorderly conduct elsewhere. (Randall's Com. School Sys., p. 262.) But the opinion of any one man, whatever may be his position and learning, can not stand against the decisions of the courts. We have preferred, therefore, to go back of this opinion, and look at the law for ourselves. Although we must confess that in the outset we expected to find authorities to support the opinion rather than to controvert it, now, however, after long and laborious research, we believe that our preconceived notions were erroneous; for although the courts have rarely been called upon to consider this subject, it has, nevertheless, been before them, and the law upon it has been fully and clearly explained.

A MUSIC-MASTER IN TROUBLE.

This was an action for an assault, in which the defendant, as music-master of the *Chichester Cathedral*, pleaded a justification of the trespass, as committed by him, in correcting the plaintiff, who was a chorister of the cathedral, and had absented himself from his duty. The cause was tried at the Assizes at *Sussex*, when a verdict was found for the plaintiff for the sum of £5, it being held that the justification was not sustainable. It appeared that the plaintiff had applied to the master for leave to go and sing at a certain club, but permission was refused. Notwithstanding this refusal, the plaintiff went to the club, and on the next day the defendant, as music master of the cathedral, and consequently having jurisdiction over the choristers,

corrected the plaintiff, and committed the assault complained of. At the trial evidence was offered of the practice at other cathedrals, but was rejected. Evidence was also proposed to be brought forward in order to show that the chorister's practicing at the clubs disqualified him for singing in the cathedral. The judge at the trial thought the evidence too general, and rejected it. The defendant now moved, on the ground of misdirection, to set aside the verdict, and have a new trial. Mr. Justice Bayley observed, thereupon, "that the boy was under an obligation to attend in the church at certain periods, in order to receive instruction, but that the master had no occasion for his services at the time when his absence was complained of." And Chief-Justice Abbott said, that "supposing the boy had bathed and caught cold, that would be injurious to his singing, but would not justify the measures adopted by the defendant." A new trial was therefore refused. (*Newman v. Bennett*, 2 Chitt., 195.) This decision, it will be observed, does not go so far as to say that the music-master could under no circumstances punish his pupils for misconduct out of school-hours, but it would seem that the alleged cause of the punishment was the absence of the pupil from duty, and one of the judges merely decides that "at that time the master had no occasion for the services" of the pupil, and consequently the defense failed. And the chief-justice merely added to this, that even if the boy did injure his voice singing at the clubs, he did not thereby commit such an offense as would justify the master in correcting him corporeally. The court, therefore, seem to have been unwilling to declare that the master could under no circumstances punish his pupil for misconduct out of the hours set apart for instruction, but confined themselves rather to this particular instance, and without declaring any general principle, decided that the offense was not sufficient to justify the act of the teacher. It must be borne in mind also that this is

in reference to the authority of teacher only, and that the jurisdiction of other teachers is altogether denied. Consequently, even if the court decided that the jurisdiction of masters could not in any instance be acts done outside of the school, this decision would in no respect define the authority of other teachers. Teachers, we believe, do not, as a thing, claim or care to be held responsible for the conduct of their pupils, during the particular hours that are set apart for their instruction. A teacher's duty is merely to develop musical faculties, and he has no power given him by law than is necessary for the accomplishment of that end. The jurisdiction of other teachers is not so circumscribed. They are employed for vast other purposes. They must teach the child of health, with all the learning, without the pay of the doctor; they must inculcate the principles of morality with the impressive sincerity, but without the sectarianism of the minister; they must be altogether more patient and disinterested than parents, and more even-tempered than Almighty himself, for He was "when he punished the wicked," if a teacher punishes in anger, he is guilty of an assault and battery; they must invent schemes to invert human nature and make every good thing and every enticing, and every bad thing and every abominably disgusting, especially "desperately wicked," who have been so in them;" they must tenderly guard the zeal of the too ambitious, and rebuke the dullest blockhead with a thirst for fame and knowledge; the craftily uncouth and vicious they must guard with the tastes, instincts, and manly the refined and virtuous. And in every way must turn all from the thousand temptations that lead to indolence, ignorance, and idleness and prepare them to find infallibly the ways of pleasantness and all the paths of peace. These are the high purposes for which teachers are employed, and it would be a shame and a reproach to so much of them, and at the same time to put their hands by withholding from them the power which is indispensable to

their success. The law is not so unreasonable—for with every well defined duty the law gives an incontestable right to all the power necessary for the performance of that duty.

A REMARKABLE CASE.

In the Court of Common Pleas of Lawrence County, Indiana, a teacher was tried, about six years ago, for assault and battery, and found guilty under the following circumstances:

The evidence showed that the alleged assault and battery was inflicted by the defendant in the capacity of a school-master, on the prosecutor, a boy of some fifteen or sixteen years of age, as a pupil attending his school, by way of correction, for a violation of the rules of the school by the prosecutor. It also appeared that the correction was administered by the defendant on the prosecutor after the adjournment of the school in the evening, and while the latter was on his way home, for an act committed during that time, and which was seen by the defendant, who thereupon administered the correction by the infliction of sundry stripes with an ordinary sized rod. There was nothing conducing to show that the correction was other than reasonable and moderate. The court instructed the jury that although the defendant, as a teacher, was by law vested with the delegated authority to exercise control over the prosecutor as his pupil, during school hours, yet after the adjournment of his school, and after the prosecutor had left and was on his way home, his authority over him had terminated, and his act of administering correction under the circumstances was unauthorized by law, and they must find accordingly; but in fixing the defendant's punishment, they should take into view all the circumstances attending the case, and especially the motives of the defendant in committing the act, and if they should find the circumstances to warrant it, they might fix the fine as low as one cent, and without costs. Under these instructions the jury were constrained to find the defendant "guilty," but they fixed the fine at "one cent and without costs," as had been suggested by the court. (*State of Indiana v. Ariel Flinn*,

in Bedford Independent.) Here, then, we find both court and jury evidently feeling themselves hampered by what they suppose to be the law, but virtually justifying the act of the teacher, which no doubt was right and proper. This case has often been cited as a strong one against the teacher's right to punish for misbehavior on the way to and from school, but we cannot so regard it. We think it an excellent illustration rather of what courts and juries will do to shield the prudent and conscientious teacher from harm. The only indiscreet thing the teacher in this case seems to have done, was to inflict the punishment out of school. We think it would have been more prudent to wait until the next day, and inflict the punishment in the school. It is always better to take time for reflection before an act, the propriety of which is likely to be at all questioned. Besides the teacher's jurisdiction in the school-room would be less likely to be disputed, and if it were, he could find more and better authorities to support him. In fact the authority of the teacher to punish for the offense may in some measure depend upon whether the scholar continues under the jurisdiction of the master. For if the scholar, after leaving the school in the evening committed an offense as in this case, but never again returned to the school, we think that the teacher's right to inflict punishment under such circumstances, would be more than doubtful. Consequently, we would advise the punishment to be deferred in all cases until it can be inflicted in the school-room.

THE UNIVERSAL CUSTOM IN NEW-ENGLAND SCHOOLS.

The following opinion will hardly be questioned by any good lawyer, as it is well known in the profession that the court which delivered it is one of the ablest in the Union. It appeared from the evidence in the case that about an hour and a half after the scholar reached home in the evening, he used insulting language to the teacher in the presence and hearing of other members of the school. The teacher punished the offender the next day in school. Able counsel were engaged on

both sides, and as the first decision was not satisfactory, the case was appealed and argued with great ability before the supreme court. The judges all agreed upon the following opinion: There seems to be no reasonable doubt that the supervision and control of the master over the scholar extends from the time he leaves home to go to school till he returns home from school. Most parents would expect and desire that teachers should take care that their children in going to and returning from school, should not loiter, or seek evil company, or frequent vicious places of resort. Even after the pupil has reached home, and has been there some time, if he should commit any act of misbehavior which would have a direct and immediate tendency to injure the school and to subvert the master's authority, he may be punished for it in school the next day. The misbehavior must not have merely a remote and indirect tendency to injure the school. All improper conduct or language may perhaps have by influence and example, a remote tendency of that kind. But the tendency of the acts so done out of the teacher's supervision, for which he may punish, must be direct and immediate in their bearing upon the welfare of the school, or the authority of the master and the respect due him. Cases may readily be supposed which lie very near the line, and it will often be difficult to distinguish between the acts which have such an immediate and those which have such a remote tendency. Hence each case must be determined by its peculiar circumstances. Acts done to deface or injure the school-room, to destroy the books of scholars, or the books or apparatus for instruction, or the instruments of punishment of the master; language used to other scholars to stir up disorder and insubordination, or heap odium or disgrace upon the master; writings and pictures placed so as to suggest evil and corrupt language, images, and thoughts to the youth who must frequent the school;—all such or similar acts tend directly to impair the usefulness of the school, the welfare of the scholars, and the authority of the master. By common consent, and by the universal custom in our New-England schools, the master has always been deemed to

have the right to punish such offenses, (even though, as in the present case, they are committed out of school-hours.) Such power is essential to the preservation of order, decency, decorum, and good government in schools. (Lander v. Seaver, 32 Vermont R., 120.) We cite the foregoing authority with the utmost confidence, and believe it to be entirely correct. But even though the teacher's *right* to punish for misbehavior on the way to and from school is fully established in point of law, yet, on account of the opposition which it meets with in some localities, we think that it should be exercised only when it appears to be absolutely necessary for the welfare of the school; nor then, except upon the most mature reflection and with the utmost discretion. A teacher may refuse entirely to exercise this right; and he will probably fare better even in the courts, than if he had adopted the other course, and had laid himself liable by exercising the right unnecessarily or indiscreetly. The intelligent and conscientious teacher, however, who sees the necessity and acts from good motives and with discretion, need not be deterred from doing his duty, even to the extent of exercising all his

rights—this particular one not excepted—and he need not fear the consequences. For as he will have done but his duty, the courts of justice will protect him from harm,—the most able by fully justifying his acts, and the less enlightened by fining him “one cent, and without costs.”

GOOD DEPORTMENT IN SCHOOL NOT ENOUGH.

It was the intention of the Legislature to make the public schools a system of moral training as well as seminaries of learning; and it is as necessary in the unreserved intercourse of pupils of the same school, as well without as within its precincts, to preserve the pure-minded, ingenuous, and unsuspecting children, of both sexes, from the contaminating influence of those of depraved sentiments and vicious propensities and habits, as from those infected with contagious diseases. Consequently, when a teacher expelled a scholar for her immoral practices while at home evenings, his action was sustained by the committee, and afterwards by the court, although no fault whatever had been found with the girl's conduct in school. (Sherman v. The Inhabitants of Charlestown, 8 Cush. R., 164.)

EARLY THEORIES CONCERNING THE EARTH.

II.

ASTRONOMY.

COPERNICUS died leaving his work unfinished, but the world, as we have seen, was ready for a change. Some years after the death of the philosopher, Galileo Galilei, an Italian, became a convert to the new theory, and supported it with the utmost vigor, while he corrected many of its errors. His opponents were principally leading men of the Church, who by the energy of the hierarchy had been enabled to usurp all important positions in the State, and were therefore at the head of all institutions of learning.

DIURNAL REVOLUTION.

The diurnal revolution of the earth upon its axis had been most ably presented by Galileo, and as it was most repugnant to the received opinions, was therefore the especial point to which objection was taken. The more important objections were, as might be imagined, theological, although others of a physical character were brought forward in vast numbers. The former consisted merely of Scriptural texts, which the new theory appeared to contradict. These were Joshua, x. 12, 13, which asserts that

the sun and moon stood still in the heavens; Isaiah, xxxiii. 8, where the sun is said to have gone backward ten degrees on the dial of Ahaz; together with many others of like tenor in the Psalms and other portions of Scripture. Galileo denied the propriety of a literal interpretation of such texts, maintaining that scriptural language was merely phenomenal,—speaking of natural occurrences not as they are, but as they appear, and cited the Fathers, Augustine and Hieronymus, to prove that in the primitive Church the language did not obtain a literal acceptance. He explained the phenomena themselves by the refractive power of the atmosphere.*

Many of the physical objections were of the most absurd and even puerile character, yet all were carefully refuted by Galileo. It is unnecessary, indeed it would be impossible, for us to name here a tithe of the quibbles. We notice only the most plausible one of all, with the beautiful refutation offered by the great philosopher.

THEOLOGICAL OBJECTIONS.

The cavilers urged that if the earth made a diurnal revolution, it would move with such rapidity as to leave behind all objects on its surface. To overcome this apparently insuperable objection, Galileo chose the following method of reasoning.

In the cabin of a ship at rest let us put a jar of water containing fish, and set a number of birds at liberty in the room. Let us then kindle a fire, and at the same time so arrange a vessel on the roof, that water dropping from it may fall regularly into a smaller vessel below. Now while the ship remains at rest, the fish move easily in the jar; the birds fly with equal ease towards the bow or stern; the smoke from the fire curls gracefully as it rises; while the water drops steadily into the lower vessel. Let us now impart motion to the ship. Still the birds and fish will move with equal ease in any direction, and as long as the motion is steady, the smoke will curl in its ascent as regularly as before, while the dropping water will not deviate a hair's-breadth to the right or left. This theoretical reasoning was experiment-

ally demonstrated; and thus Galileo showed that, as the motion of the ship was imparted to all objects on it, so the motion of the earth might be imparted to objects on its surface. This he further illustrated by dropping balls from the top of a tower. These fell in a vertical line (as he supposed) to the foot.

GALILEO AND THE CHURCH.

Finding all objections futile, the discomfited churchmen resorted to force. Having seized the philosopher, they carried him before the Inquisition, where, in order to escape torture and perhaps death, he signed a solemn recantation of all things contained in his works contrary to the received system. It was while affixing his name to this document that he uttered the memorable words "*E pur si muove*," indicative of his deeply rooted convictions. This is a sad epoch in the life of Galileo, a betrayal of a moral timidity totally unexpected in one who had previously manifested such wonderful intellectual courage. This is the only blot upon his life; but notwithstanding the many attempts to explain it away, it is enough to stain his reputation forever. At the same time the whole proceeding covers his opponents with shame and lasting blackness.

The works of Galileo and Copernicus were then placed on the index of forbidden works, and so remained until 1828. During that year, Pius VII. assembled the congregation of cardinals, and procured a repeal of the edicts. At the assembly, Cardinal Toriozzi proposed "that they should wipe off this scandal from the Church." So bitterly ashamed have the Jesuits been of the conduct toward Galileo, that some years ago their General at Rome denied that the philosopher was persecuted because of his doctrines, and alleged that it was because of his daring insults to the Pope. This explanation, however, can not be deemed satisfactory, so long as the records of the trial are withheld from the public, in open breach of the promise made some thirty years ago.†

† It is time that several works, purporting to be the records, have been published. They disagree, however, in so many important points, as to render them unreliable. The public are not permitted to examine the original copy.

* For a full statement of the argument, see introduction to Derham's "*Astro-Theology*," 1727.

NEWTONIAN THEORY OF GRAVITATION.

Galileo was unable to detail the principles explaining the force by which external objects are retained upon the surface. True, he had conceived of a force attracting; but it was reserved for Newton to discover the force of gravitation, and announce its laws with their proof, by which nearly every difficulty was removed. This great philosopher also repeated Galileo's experiment with the balls, and proved that an error existed in the latter's conclusions. He reasoned that, as centrifugal force is greater at the top of the tower than at the base, balls dropped from the top should fall to the east of a vertical line. Actual experiment proved the truth of his conclusions, and strengthened the general argument of Galileo. Newton's experiments were confirmed in 1804 by an investigation in Hamburg, who afterward in 1805, by an experiment made in the shaft of a coal-mine, ascertained that the easterly deflection during a fall of two hundred feet was five lines, or five-twelfths of an inch.

TYCHO BRAHE'S THEORY.

Notwithstanding the convincing proofs offered by the advocates of the new theory, it was not readily accepted. Men desired merely an alteration, not an overthrow of their long-cherished system, to which they now adhered with even greater tenacity. But the reasoning of the Copernicans was conclusive. Many modifications of that theory were therefore proposed. Tycho Brahe, the great astronomer, maintained that the earth stood at rest in the center of the universe, and that the celestial bodies revolved about it, while, however, the planets revolved about the sun, being carried with it around the earth. The semi-Tychonic or Platonic theory denied the annual revolution of the earth about the sun, but admitted the diurnal rotation upon its axis.

The relations of the earth to the other heavenly bodies remained a subject of discussion until nearly the close of the eighteenth century. One hundred and forty years ago the Ptolemaic theory was still so popular that Derham, in the introduction to his "*Astro-Theology*," labored to prove

the Newtonian theory (as the corrected Copernican theory was then termed), in order to justify himself before such of his readers as still opposed it. But as the century advanced the new theory was generally adopted, and under the name "*Copernican hypothesis*," was taught even in the Roman Catholic universities, with but one exception, that at Salamanca.

No persons of intelligence now defend the Ptolemaic theory, while that of Newton is almost universally accepted. Its simplicity, so great as to render the details of the theory comprehensible even to the most youthful student, makes it a powerful argument in natural theology, and all are now able to gain a full understanding of the heavenly systems, instead of being compelled to wander amid perplexing doubts and almost insuperable difficulties.

COSMOGONY.—MOSAIC TEACHINGS.

Beyond doubt the most ancient system of cosmogony extant is that briefly given by Moses, in the first chapter of Genesis, which maintains that matter is not eternal, but was created in a chaotic mass by a supreme self-existent Being, who afterwards by a series of operations, there detailed, shaped the universe as it now appears. These changes were performed in six distinct periods, termed days, during which successive processes of modeling took place. The account appears to be circumstantially, though not literally true, evidently given merely for the purpose of introducing the history, and not as a complete or detailed statement. It was not literally accepted by the Christian fathers, and is now received as we have given it. A too strict adherence to its literal signification has been one of the greatest obstacles to the advance of cosmological science.

EGYPTIAN COSMOGONY.

Next in order of age is that of the Egyptian priests, who, like Moses, held that the earth was created by a self-dependent being. Originally it was in the shape of an egg, which was hatched by a peculiar principle, uniting in itself the characteristics of both sexes. This theory maintained that races gradually degenerated,

CURRENT PUBLICATIONS.

It is a pleasant thing, in taking up a new work, especially if it is of a scientific character, to find that its author thoroughly understands his subject, and can clearly convey his meaning to his readers in an interesting and suggestive manner. This remark applies to Dr. Lambert's new book on Human Physiology, Anatomy, and Hygiene,¹ which we confess to have opened with a strong prejudice against all popular treatises and text-books on these subjects; arising from the fact that generally they are dry epitomes or meretricious catch-pennies. We find it to be, however, a clear, comprehensive, well-arranged, and very suggestive *résumé* of the most important facts desirable to be known concerning the human frame, and the proper control and preservation of its various functions. Its *unique* feature is the complete and careful exhibition of the whole subject, by means of a well-digested Analytic and Synthetic arrangement, which is evidently the outcropping of the author's own thought and experience as a teacher, for the last quarter of a century. To us, this is the charm and the chief value of the book. "Life is short, and Art is long;" and condensation, conjoined with comprehensiveness, is the *necessity* of all learning and study in these latter days.

Dr. L.'s work is fresh; piquantly and nervously written, frequently interspersed with valuable suggestive remarks on topics pertaining to our every-day life, making us feel that it was written to stimulate as well as to satisfy thought.

We regret to see the book made an advertisement for any particular sewing-machine, or cooking-range manufacturers (see pp. 412-414). Although the articles in question are the best of their kind, they here are out of place.

The book is handsomely printed, on good paper, and copiously illustrated with some three hundred fine wood-cuts; forming a valuable text-book for the use of schools, or the amateur reader. The medical student and practitioner also, will not be justified in looking askance upon it as a mere popular treatise, since there is in it much food for thought, even to those who have gone over the whole ground before. An edition without the foot-notes has been prepared, which is well adapted for library use.

Every one who has succeeded in giving clear notions of algebra to beginners will readily concede that he has met with his

greatest difficulty in the very first steps—in the transition from arithmetic to algebra. "Tell me what a , b , c , x , y , and z mean, and I can then understand the rest," is the honest expression of every tyro. At this point, too, usually commences that disgust which finally expresses itself by saying, "I have no talent for mathematics. I like the classics, but I can not comprehend the signs and symbols and ghostly formulas which meet me on every page of my algebra." In fact, algebra, rightly taught, becomes of itself a language; its parts are to be construed, its symbols translated, and its formulas turned into good English. It ought to find its warmest advocates among the lovers of language.

More loss may be sustained, the very first week of the pupil's course, than can be retrieved in a whole lifetime. To tell the learner that "algebra is that branch of mathematics in which the operations are indicated by signs or symbols, and the quantities are represented by letters," is as intelligible to him as the oracular utterance of the physician who informs his illiterate patient that "the first diagnosis of his case indicates the necessity of phlebotomy." The pupil is too timid to say he does not understand so clear a definition, particularly as the teacher seems to think nothing of it. But "light" is in store for him. He immediately finds that the first letters of the alphabet represent *known* quantities, while the last letters represent *unknown*. Mark his progress. Here is something tangible. Tell him that an estate valued at a dollars has fallen to him, and you interest him because it is a matter personal to himself. He begins to look for income, and is informed that this handsome sum, put at interest at b per cent, will yield him annually the nice sum of c dollars. You wait for a response, at least, in an irrepressible glow of his countenance, at such good fortune. Of course, he smiles; he dare not say that he does not *know* so simple a letter as a —the *first* letter of the alphabet, too—the representative of a *known* quantity. What else can he do but smile in token of what he now *knows*, especially as it pertains to his own personal welfare? But down in the depths of his mind—not very deep either—he says, *I do wish I knew what a , b , and c really mean.* He scarcely ventures to utter it, yet he can but wonder how much more perplexed he is soon to be when he comes to the *real* unknown quantities— x , y , and z ; and inwardly congratulates himself that his income was not announced in such unintelligible terms as these. The truth is, he has been accustomed only to the *definite* symbols, 1, 2, 3, 4, etc., to which *one* and *only one* value is attached. The symbol 5 is *known*; because it everywhere means

(1) *SYSTEMATIC HUMAN PHYSIOLOGY, ANATOMY, AND HYGIENE*; being an Analysis and Synthesis of the Human System, with practical conclusions. With many new and complete illustrations. By T. S. LAMBERT, M. D. New York: William Wood & Co., 1865. 12mo, pp. 420. \$1.25.

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ESSENTIALS FOR A SUCCESSFUL TEACHER.

Recent commencement exercises at New Jersey State Normal School, Trenton, the Reverend W. H. D. D., President of Rutgers University, addressed the graduating class in words appropriate for teachers in every

in his introductory remarks, relations which we sustain to which they, in turn, sustain to with the varied duties which in these relations, must all be before our corresponding duties are. Now nearly all this knowledge is additional—that is, it is gained, if it, by being handed down from her. What one has gained by or another by original investigations to swell the general sum of ; and this, with its constant ones, is to be handed down by ion unto the next, in order that eding generation may act its than its predecessor, and do otly the duty which God has it. Unto every generation it rampet tones, “Freely ye have eely give.” Popular education, idea, recognizes the obligation in a generation to communicate wledge it has and can get, in the future race of men for act-eir part in life. Paley says : i, in the most extensive sense l, may comprehend every prept is made in our youth for the ur lives ;” and the public is ake all preparation that the se-

quel of the lives of our youth shall be such as it ought. One must not be allowed to come into life and go without, or get unaided and as best he can, the knowledge which he needs. All experience shows that this would be to send the race back again to barbarism. The firm conviction of all enlightened men and governments is, that public provision must be made to communicate all necessary knowledge, and in the easiest and best way. Hence, the class of persons called teachers has arisen. And a more important and honorable class of men and women does not exist on earth, since their work is—and they are doing it nobly—to prepare man to know and act well his part in life.

He then proceeded to discuss, in his well-known forcible style, some of those elements of character which have, in the past, given success to the labors of the teacher, and in the possession of which the teacher of to-day may go forth hopefully unto his work.

A THIRST FOR KNOWLEDGE.

Appreciating the end of his own being, the teacher himself wishes to *know*, that he *may do*. It is not merely knowledge for itself, for the mere sake of knowing, which is desired. This would be mere curiosity, which is by no means an elevated feeling. If one knew all the languages into which Babel has cleft the earth, and were that the end of his acquisition, a day laborer, with a very moderate share of knowledge of his mother tongue, but who

took the well-being of others into his thoughts and feelings, his plans and ends, would be not only a better man in the moral aspects of the question, but also a better educated man, in the true sense of the word education. Nor is the knowledge sought because, by the acquisition, its possessor can become rich and powerful. This is mere selfishness, which is a base and sordid feeling; and wherever it gets the mastery it renders a man so consciously base that, self-condemned, he excludes himself, as unworthy, from the society and converse of men of eminent virtue and philanthropy. But the thirst for knowledge, which the good can approve, is his who, while he does not ignore self, or seek to be better than our Lord required, since he commands us to love our neighbor *as ourselves*, nevertheless wishes to know *much* in order that he may do *more*, which will be beneficial unto others.

In a word, then, the successful teacher must first have become a successful scholar. He must, in some way or other, have learned the lesson, and learned it thoroughly, that a man is not his own, having no relations or affinities to others. He is placed here to be rain and sunshine, fresh air and fragrance, food and flowers, any thing and every thing that is good and beautiful, consolatory and strengthening, reforming and purifying, unto every one that needs his help and unto whom he is able to render it. Let this big thought come down into the soul (and what contractibility of heart must first have been overcome before this thought could find room in these shriveled, shrunken souls of ours)—let this big thought, I say, come down into the soul, and it converts the man at once into a most diligent learner. What must I do, and how can my duty be best done? are now the life-questions which are ever asked, and unto which ready answers are also ever vouchsafed; for here he who asks receives, and he who seeks finds. And now, on the strength of the answers, you find him diligently prosecuting his work of preparation for future usefulness. Grammar, Geography, Mathematics, Natural Sciences, Mental or Moral Philosophy, Latin or Greek, French or German, whatever it be whereby his use-

fulness can be promoted, is unweariedly pursued. Early and late you find him employed, and no figure of speech brings up so forcibly before us the desire which ever prompts his action, as that just used by us, when we spoke of a *thirst* for knowledge.

Now put the young man who has gone through such experiences into a school-room, and would you not expect him to succeed? Can you be near a fire and not get warm? Shall the sun shine, and darkness not flee away? Shall a young woman pass before you day by day in the school-room, who has consecrated herself for the good of the children to a life of weariness, bearing their perverseness and waywardness, and manifesting an unceasing regard for the welfare of her pupils, without becoming more fragrant to their moral senses than perfumes and spices are to our natural organs? Before such a teacher an unwillingness to study this subject or that would pass away as soon as the precept of the teacher, fortified by her own beautiful example, had taken hold of the tender heart of the pupil, and convinced him wholly that any study was to be loved and pursued according as it was fitted to make him better and more useful.

It is back of the school-room where the success may be gained, that the foundation of that success was laid. In the private chamber, where seen only by God, he devoted himself to a life of usefulness; in the distant rural school-house, where under many and almost insurmountable difficulties, he prosecuted his studies; in the rooms of this noble institution, where his industry and regard for every thing that is seemly and good, has made his name almost a proverb,—in these spots his success was gained. Here he has sown, and what remained for him was to go forth and reap his harvest.

A LOVE FOR COMMUNICATING KNOWLEDGE.

This, in the most of successful teachers, is, in a greater or less degree, a natural gift. They are born teachers. They never knew when they did not love to teach. But this gift is also susceptible of high cultivation; and under those moral experiences, of which I have already spoken as

life, energy, and persistence to the love for knowledge, this love for communicating information becomes so intense that a mid-day meal will often be neglected for the pleasure of imparting knowledge. This it is that takes from the classroom now all that gloom and horror, under the rule of some pedagogical system, makes it appear as if it were a room in mourning. Under the smile of him who loves to teach, the school-room becomes to the pupil a place of pleasant and useful pursuits, and of mastering difficulties; the birthplace of bright hopes and aspirations, and a place to which memory, in after years, looks back with a pure and serene joy. I am satisfied I am that the success of a teacher, in the highest sense of his word, depends on his own thirst for knowledge and his love for communicating, that in examining a teacher with a view to employment, I should question him almost most fully on these two points; if he was right here, I should feel that there was little reason to fear any deficiency with respect to mere book-learning. But if I could find that a hireling, an impostor, come to be examined, a man or—shall I not in Gath!—a woman, who neither loved children nor loved to teach, I should expect to find him deficient in the mere learning of books; and I should most assuredly try to find out his deficiencies, if he had any, and with hearty good-will would help to turn him back—on the school-house of my or her district. For if there is anything short of the immediate frown of which more than another a parent can appreciate, it is the subjection of his mind to the tyrannous, soul-shriveling of a man or a woman, who, for six days of the day, and for six days of the week has in his care—care indeed! Oh,

sad misnomer!—the susceptible minds of children, to train them to the love and pursuit of those things which he himself hates.

APTNESS TO TEACH

Is the last element of the character of the successful teacher which I shall name.

It has been said "that what we know thoroughly we can usually express clearly, since ideas will supply words." If this statement is correct—and I believe it is—then our teacher, with his thirst for knowledge and his love of communicating it, will almost of necessity fall into an easy, simple, clear method of communicating his thoughts, which will make teaching as natural and easy as the putting on of an old glove. There will also be such a hearty sympathy between him and his pupils that, almost by intuition, he will see what is needed to make the lesson of to-day clearer and more impressive; and what was seen to be deficient to-day, the zeal and intelligence of the teacher will supply to-morrow. I never, indeed, knew a really hearty teacher who did not thus become apt to teach. I have known those who, at first, were slow of speech, and through diffidence hesitated much; at times, too, thoughts were given forth confusedly, and hence they failed at first to interest the children. But these difficulties soon disappeared before the zeal and industry of the teacher, who loved his work, and was resolved to succeed. He who himself thirsts for knowledge soon learns that right methods of study are essential to progress; that there is also a right and a wrong way of putting things, and that, when the right method is used, instruction glides gently into the understanding, wins the love of the heart, and then calls forth the prompt activities of the will. The whole man in the scholar awaits the bidding of the earnest, intelligent, loving teacher.

Harvard College roll of honor contains the names of three major-generals, brigadier-generals, thirty-seven colonels, seventeen majors, one hundred and seventy-six lieutenants, one hundred

and twenty-seven medical officers, sixty-eight chaplains, twenty-one paymasters, six naval officers, eighty-one privates and non-commissioned officers, besides a large number whose latest rank is not yet known.

PEDAGOGICAL LAW.

III.

PUNISHING FOR MISCONDUCT OUT OF SCHOOL.

WHEN the late Hon. John C. Spencer—a gentleman of such eminent legal ability that he had scarcely a peer at the New York bar—was Superintendent of Schools for the State of New York, he is said to have given the following opinion: The authority of the teacher to punish his scholars extends to acts done in the school-room, or play-ground, only; and he has no legal right to punish for improper or disorderly conduct elsewhere. (Randall's Com. School Sys., p. 262.) But the opinion of any one man, whatever may be his position and learning, can not stand against the decisions of the courts. We have preferred, therefore, to go back of this opinion, and look at the law for ourselves. Although we must confess that in the outset we expected to find authorities to support the opinion rather than to controvert it, now, however, after long and laborious research, we believe that our preconceived notions were erroneous; for although the courts have rarely been called upon to consider this subject, it has, nevertheless, been before them, and the law upon it has been fully and clearly explained.

A MUSIC-MASTER IN TROUBLE.

This was an action for an assault, in which the defendant, as music-master of the *Obichesther Cathedral*, pleaded a justification of the trespass, as committed by him, in correcting the plaintiff, who was a chorister of the cathedral, and had absented himself from his duty. The cause was tried at the Assizes at *Sussex*, when a verdict was found for the plaintiff for the sum of £5, it being held that the justification was not sustainable. It appeared that the plaintiff had applied to the master for leave to go and sing at a certain club, but permission was refused. Notwithstanding this refusal, the plaintiff went to the club, and on the next day the defendant, as music master of the cathedral, and consequently having jurisdiction over the choristers,

corrected the plaintiff, and committed the assault complained of. At the trial evidence was offered of the practice at other cathedrals, but was rejected. Evidence was also proposed to be brought forward in order to show that the chorister's practicing at the clubs disqualified him for singing in the cathedral. The judge at the trial thought the evidence too general, and rejected it. The defendant now moved, on the ground of misdirection, to set aside the verdict, and have a new trial. Mr. Justice Bayley observed, thereupon, "that the boy was under an obligation to attend in the church at certain periods, in order to receive instruction, but that the master had no occasion for his services at the time when his absence was complained of." And Chief-Justice Abbott said, that "supposing the boy had bathed and caught cold, that would be injurious to his singing, but would not justify the measures adopted by the defendant." A new trial was therefore refused. (*Newman v. Bennett*, 3 Chitt., 195.) This decision, it will be observed, does not go so far as to say that the music-master could under no circumstances punish his pupils for misconduct out of school-hours, but it would seem that the alleged cause of the punishment was the absence of the pupil from duty, and one of the judges merely decides that "at that time the master had no occasion for the services" of the pupil, and consequently the defense failed. And the chief-justice merely added to this, that even if the boy did injure his voice singing at the clubs, he did not thereby commit such an offense as would justify the master in correcting him corporeally. The court, therefore, seem to have been unwilling to declare that the master could under no circumstances punish his pupil for misconduct out of the hours set apart for instruction, but confined themselves rather to this particular instance, and without declaring any general principle, decided that the offense was not sufficient to justify the act of the teacher. It must be borne in mind also that this is

on in reference to the authority of the teacher only, and that the jurisdiction of other teachers is altogether extended. Consequently, even if the law decided that the jurisdiction of masters could not in any instance to acts done outside of the school, this decision would in no respect define the authority of other teachers. Teachers, we believe, do not, as a thing, claim or care to be held responsible for the conduct of their pupils, during the particular hours that are set apart for their instruction. A teacher's duty is merely to develop musical faculties, and he has no power given him by law than is necessary for the accomplishment of that end. The authority of other teachers is not so circumscribed. They are employed for vast other purposes. They must teach the child of health, with all the learning, without the pay of the doctor; they must inculcate the principles of morality with the impressive sincerity, but without the sectarianism of the minister; they must be altogether more patient and disinterested than parents, and more even-tempered than Almighty himself, for He was patient when he punished the wicked, as, if a teacher punishes in anger, he is guilty of an assault and battery; they must invent schemes to invert human nature and make every good thing and every enticing, and every bad thing and every abominably disgusting, especially "desperately wicked," who have a rod in them;" they must tenderly temper the zeal of the too ambitious, and cure the dulllest blockhead with a thirst for fame and knowledge; the more glibly uncouth and vicious they must be with the tastes, instincts, and manly feelings of the refined and virtuous. And in this they must turn all from the thousand temptations that lead to indolence, ignorance, and idleness and prepare them to find infallibly the ways of pleasantness and all the paths of peace. These are the high purposes for which teachers are employed, and it would be a shame and a reproach to let so much of them, and at the same time to let their hands be withholding from the power which is indispensable to

their success. The law is not so unreasonable—for with every well defined duty the law gives an incontestable right to all the power necessary for the performance of that duty.

A REMARKABLE CASE.

In the Court of Common Pleas of Lawrence County, Indiana, a teacher was tried, about six years ago, for assault and battery, and found guilty under the following circumstances:

The evidence showed that the alleged assault and battery was inflicted by the defendant in the capacity of a school-master, on the prosecutor, a boy of some fifteen or sixteen years of age, as a pupil attending his school, by way of correction, for a violation of the rules of the school by the prosecutor. It also appeared that the correction was administered by the defendant on the prosecutor after the adjournment of the school in the evening, and while the latter was on his way home, for an act committed during that time, and which was seen by the defendant, who thereupon administered the correction by the infliction of sundry stripes with an ordinary sized rod. There was nothing conducing to show that the correction was other than reasonable and moderate. The court instructed the jury that although the defendant, as a teacher, was by law vested with the delegated authority to exercise control over the prosecutor as his pupil, during school hours, yet after the adjournment of his school, and after the prosecutor had left and was on his way home, his authority over him had terminated, and his act of administering correction under the circumstances was unauthorized by law, and they must find accordingly; but in fixing the defendant's punishment, they should take into view all the circumstances attending the case, and especially the motives of the defendant in committing the act, and if they should find the circumstances to warrant it, they might fix the fine as low as one cent, and without costs. Under these instructions the jury were constrained to find the defendant "guilty," but they fixed the fine at "one cent and without costs," as had been suggested by the court. (*State of Indiana v. Ariel Flinn,*

in Bedford Independent.) Here, then, we find both court and jury evidently feeling themselves hampered by what they suppose to be the law, but virtually justifying the act of the teacher, which no doubt was right and proper. This case has often been cited as a strong one against the teacher's right to punish for misbehavior on the way to and from school, but we cannot so regard it. We think it an excellent illustration rather of what courts and juries will do to shield the prudent and conscientious teacher from harm. The only indiscreet thing the teacher in this case seems to have done, was to inflict the punishment out of school. We think it would have been more prudent to wait until the next day, and inflict the punishment in the school. It is always better to take time for reflection before an act, the propriety of which is likely to be at all questioned. Besides the teacher's jurisdiction in the school-room would be less likely to be disputed, and if it were, he could find more and better authorities to support him. In fact the authority of the teacher to punish for the offense may in some measure depend upon whether the scholar continues under the jurisdiction of the master. For if the scholar, after leaving the school in the evening committed an offense as in this case, but never again returned to the school, we think that the teacher's right to inflict punishment under such circumstances, would be more than doubtful. Consequently, we would advise the punishment to be deferred in all cases until it can be inflicted in the school-room.

THE UNIVERSAL CUSTOM IN NEW-ENGLAND SCHOOLS.

The following opinion will hardly be questioned by any good lawyer, as it is well known in the profession that the court which delivered it is one of the ablest in the Union. It appeared from the evidence in the case that about an hour and a half after the scholar reached home in the evening, he used insulting language to the teacher in the presence and hearing of other members of the school. The teacher punished the offender the next day in school. Able counsel were engaged on

both sides, and as the first decision was not satisfactory, the case was appealed and argued with great ability before the supreme court. The judges all agreed upon the following opinion: There seems to be no reasonable doubt that the supervision and control of the master over the scholar extends from the time he leaves home to go to school till he returns home from school. Most parents would expect and desire that teachers should take care that their children in going to and returning from school should not loiter, or seek evil company, or frequent vicious places of resort. Even after the pupil has reached home, and has been there some time, if he should commit any act of misbehavior which would have a direct and immediate tendency to injure the school and to subvert the master's authority, he may be punished for it in school the next day. The misbehavior must not have merely a remote and indirect tendency to injure the school. All improper conduct or language may perhaps have by influence and example, a remote tendency of that kind. But the tendency of the acts so done out of the teacher's supervision, for which he may punish, must be direct and immediate in their bearing upon the welfare of the school, or the authority of the master and the respect due him. Cases may readily be supposed which lie very near the line, and it will often be difficult to distinguish between the acts which have such an immediate and those which have such a remote tendency. Hence each case must be determined by its peculiar circumstances. Acts done to deface or injure the school-room, to destroy the books of scholars, or the books or apparatus for instruction, or the instruments of punishment of the master; language used to other scholars to stir up disorder and insubordination, or heap odium or disgrace upon the master; writings and pictures placed so as to suggest evil and corrupt language, images, and thoughts to the youth who must frequent the school;—all such or similar acts tend directly to impair the usefulness of the school, the welfare of the scholars, and the authority of the master. By common consent, and by the universal custom in our New-England schools, the master has always been deemed to

the right to punish such offenses, though, as in the present case, they committed out of school-hours.) Such is essential to the preservation of decency, decorum, and good government in schools. (*Lander v. Seaver*, 32 Ver. R., 120.) We cite the foregoing authority with the utmost confidence, and deem it to be entirely correct. But even if the teacher's right to punish for behavior on the way to and from school is fully established in point of law, in account of the opposition which it meets with in some localities, we think it should be exercised only when it seems to be absolutely necessary for the welfare of the school; nor then, except upon the most mature reflection and with the greatest discretion. A teacher may refuse to exercise this right; and he will probably fare better even in the courts, if he had adopted the other course, and laid himself liable by exercising the right unnecessarily or indiscreetly. An intelligent and conscientious teacher, however, who sees the necessity and acts for good motives and with discretion, should not be deterred from doing his duty, to the extent of exercising all his

rights—this particular one not excepted—and he need not fear the consequences. For as he will have done but his duty, the courts of justice will protect him from harm,—the most able by fully justifying his acts, and the less enlightened by fining him “one cent, and without costs.”

GOOD DEPORTMENT IN SCHOOL NOT ENOUGH.

It was the intention of the Legislature to make the public schools a system of moral training as well as seminaries of learning; and it is as necessary in the unreserved intercourse of pupils of the same school, as well without as within its precincts, to preserve the pure-minded, ingenuous, and unsuspecting children, of both sexes, from the contaminating influence of those of depraved sentiments and vicious propensities and habits, as from those infected with contagious diseases. Consequently, when a teacher expelled a scholar for her immoral practices while at home evenings, his action was sustained by the committee, and afterwards by the court, although no fault whatever had been found with the girl's conduct in school. (*Sherman v. The Inhabitants of Charlestown*, 8 Cush. R., 164.)

EARLY THEORIES CONCERNING THE EARTH.

II.

ASTRONOMY.

PERNICUS died leaving his work unfinished, but the world, as we have seen, was ready for a change. Some years after the death of the philosopher, Galileo Galilei, an Italian, became a convert to the new theory, and supported it with the utmost vigor, while he corrected many of its errors. His opponents were principally the great men of the Church, who by the support of the hierarchy had been enabled to occupy all important positions in the world, and were therefore at the head of all systems of learning.

DIURNAL REVOLUTION.

The diurnal revolution of the earth upon its axis had been most ably presented by Galileo, and as it was most repugnant to the received opinions, was therefore the especial point to which objection was taken. The more important objections were, as might be imagined, theological, although others of a physical character were brought forward in vast numbers. The former consisted merely of Scriptural texts, which the new theory appeared to contradict. These were *Joshua, x. 12, 13*, which asserts that

the sun and moon stood still in the heavens; Isaiah, xxxiii. 8, where the sun is said to have gone backward ten degrees on the dial of Ahaz; together with many others of like tenor in the Psalms and other portions of Scripture. Galileo denied the propriety of a literal interpretation of such texts, maintaining that scriptural language was merely phenomenal,—speaking of natural occurrences not as they are, but as they appear, and cited the Fathers, Augustine and Hieronymus, to prove that in the primitive Church the language did not obtain a literal acceptance. He explained the phenomena themselves by the refractive power of the atmosphere.*

Many of the physical objections were of the most absurd and even puerile character, yet all were carefully refuted by Galileo. It is unnecessary, indeed it would be impossible, for us to name here a tithe of the quibbles. We notice only the most plausible one of all, with the beautiful refutation offered by the great philosopher.

THEOLOGICAL OBJECTIONS.

The cavilers urged that if the earth made a diurnal revolution, it would move with such rapidity as to leave behind all objects on its surface. To overcome this apparently insuperable objection, Galileo chose the following method of reasoning.

In the cabin of a ship at rest let us put a jar of water containing fish, and set a number of birds at liberty in the room. Let us then kindle a fire, and at the same time so arrange a vessel on the roof, that water dropping from it may fall regularly into a smaller vessel below. Now while the ship remains at rest, the fish move easily in the jar; the birds fly with equal ease towards the bow or stern; the smoke from the fire curls gracefully as it rises; while the water drops steadily into the lower vessel. Let us now impart motion to the ship. Still the birds and fish will move with equal ease in any direction, and as long as the motion is steady, the smoke will curl in its ascent as regularly as before, while the dropping water will not deviate a hair's-breadth to the right or left. This theoretical reasoning was experiment-

ally demonstrated; and thus Galileo showed that, as the motion of the ship was imparted to all objects on it, so the motion of the earth might be imparted to objects on its surface. This he further illustrated by dropping balls from the top of a tower. These fell in a vertical line (as he supposed) to the foot.

GALILEO AND THE CHURCH.

Finding all objections futile, the discredited churchmen resorted to force. Having seized the philosopher, they carried him before the Inquisition, where, in order to escape torture and perhaps death, he signed a solemn recantation of all things contained in his works contrary to the received system. It was while affixing his name to this document that he uttered the memorable words "*Epursi muove*," indicative of his deeply rooted convictions. This is a sad epoch in the life of Galileo, a betrayal of a moral timidity totally unexpected in one who had previously manifested such wonderful intellectual courage. This is the only blot upon his life; but notwithstanding the many attempts to explain it away, it is enough to stain his reputation forever. At the same time the whole proceeding covers his opponents with shame and lasting blackness.

The works of Galileo and Copernicus were then placed on the index of forbidden works, and so remained until 1838. During that year, Pius VII. assembled the congregation of cardinals, and procured a repeal of the edicts. At the assembly, Cardinal Toriozzi proposed "that they should wipe off this scandal from the Church." So bitterly ashamed have the Jesuits been of the conduct toward Galileo, that some years ago their General at Rome denied that the philosopher was persecuted because of his doctrines, and alleged that it was because of his daring insults to the Pope. This explanation, however, can not be deemed satisfactory, so long as the records of the trial are withheld from the public, in open breach of the promise made some thirty years ago.†

† It is time that several works, purporting to be the records, have been published. They disagree, however, in so many important points, as to render them unreliable. The public are not permitted to examine the original copy.

* For a full statement of the argument, see introduction to Darham's "*Astro-Theology*," 1727.

NEWTONIAN THEORY OF GRAVITATION.

Galileo was unable to detail the principles explaining the force by which external objects are retained upon the surface. True, he had conceived of a force attracting; but it was reserved for Newton to discover the force of gravitation, and announce its laws with their proof, by which nearly every difficulty was removed. This great philosopher also repeated Galileo's experiment with the balls, and proved that an error existed in the latter's conclusions. He reasoned that, as centrifugal force is greater at the top of the tower than at the base, balls dropped from the top should fall to the east of a vertical line. Actual experiment proved the truth of his conclusions, and strengthened the general argument of Galileo. Newton's experiments were confirmed in 1804 by an investigation in Hamburg, who afterward in 1805, by an experiment made in the shaft of a coal-mine, ascertained that the easterly deflection during a fall of two hundred feet was five lines, or five-twelfths of an inch.

TYCHO BRAHE'S THEORY.

Notwithstanding the convincing proofs offered by the advocates of the new theory, it was not readily accepted. Men desired merely an alteration, not an overthrow of their long-cherished system, to which they now adhered with even greater tenacity. But the reasoning of the Copernicans was conclusive. Many modifications of that theory were therefore proposed. Tycho Brahe, the great astronomer, maintained that the earth stood at rest in the center of the universe, and that the celestial bodies revolved about it, while, however, the planets revolved about the sun, being carried with it around the earth. The semi-Tychonic or Platonic theory denied the annual revolution of the earth about the sun, but admitted the diurnal rotation upon its axis.

The relations of the earth to the other heavenly bodies remained a subject of discussion until nearly the close of the eighteenth century. One hundred and forty years ago the Ptolemaic theory was still so popular that Derham, in the introduction to his "Astro-Theology," labored to prove

the Newtonian theory (as the corrected Copernican theory was then termed), in order to justify himself before such of his readers as still opposed it. But as the century advanced the new theory was generally adopted, and under the name "*Copernican hypothesis*," was taught even in the Roman Catholic universities, with but one exception, that at Salamanca.

No persons of intelligence now defend the Ptolemaic theory, while that of Newton is almost universally accepted. Its simplicity, so great as to render the details of the theory comprehensible even to the most youthful student, makes it a powerful argument in natural theology, and all are now able to gain a full understanding of the heavenly systems, instead of being compelled to wander amid perplexing doubts and almost insuperable difficulties.

COSMOGONY.—MOSAIC TEACHINGS.

Beyond doubt the most ancient system of cosmogony extant is that briefly given by Moses, in the first chapter of Genesis, which maintains that matter is not eternal, but was created in a chaotic mass by a supreme self-existent Being, who afterwards by a series of operations, there detailed, shaped the universe as it now appears. These changes were performed in six distinct periods, termed days, during which successive processes of modeling took place. The account appears to be circumstantially, though not literally true, evidently given merely for the purpose of introducing the history, and not as a complete or detailed statement. It was not literally accepted by the Christian fathers, and is now received as we have given it. A too strict adherence to its literal signification has been one of the greatest obstacles to the advance of cosmological science.

EGYPTIAN COSMOGONY.

Next in order of age is that of the Egyptian priests, who, like Moses, held that the earth was created by a self-dependent being. Originally it was in the shape of an egg, which was hatched by a peculiar principle, uniting in itself the characteristic ties of both sexes. This theory maintained that races gradually degenerated,

until a certain point was reached, when the globe was renovated. All the important features of this system seem to have been borrowed from that just mentioned. The fiction of the "mundane egg," as it is termed, was undoubtedly taken from the expression in Genesis, i. 2: "and the Spirit of God moved upon the face of the waters." In the original the word here translated "moved" signifies the brooding of a hen over her young. The future destruction of the earth seems to have been a favorite idea among the ancients, for we find it forming an especial feature of most cosmological systems.

MYTHOLOGICAL COSMOGONY.

The system found in the Grecian mythology resembles that of the Egyptian priests. The fable of the "mundane egg"* was early introduced by Orpheus, who in all probability received it from Egypt. It asserted a succession of cataclysms, by which the earth was entirely renovated, and fitted for the existence of higher races. This idea was perhaps borrowed at a later period from the Hindoos. From time to time independent thinkers arose among the philosophers of Greece, who denied the truth of the mythology. Some of the new theories were as ridiculous as the popular belief, while others were worthy of careful examination. The people, however, were so attached to their religion, as to render its theories impregnable, and to endanger the lives of the bold philosophers. Still it can not be doubted that had the reformers fortified their hypotheses by actual experiments, their views would have been more favorably received.

HINDOO THEORY.

The Hindoo theory is deserving of notice. Like those already mentioned, it ascribed the creation of the earth to an eternal, self-existent being, who, as the Brahmins maintain in their sacred book, "The Institutes of Menu," at times reposes: then the whole creation fades away; but again it awakes and revivifies the whole universe, which "then has its full expansion." Of these alternate destructions and

revivifications there has been an immense number, all of which the supreme being performed with the greatest ease for the good of its creatures.

This system is worthy of careful examination, not only because of its great antiquity having been completed nearly one thousand years before our era, but also because of the remarkable accuracy of its statements. Many have maintained that it was the offspring of mere imagination; but, as Sir Charles Lyell ably argues, the assertions concerning the length of day at the poles and on the moon can not be mere conjecture: and as these must have been deduced from observation, it is not at all improbable that the belief in successive cataclysms may have been derived from investigations of the crust of the earth. "The Institutes of Menu" were translated and published by Sir William Jones in 1796. The work will amply repay perusal.

VARIOUS THEORIES.

The same theory of successive revolutions was, as we have already said, held by the Greeks. A similar belief prevailed among the Arabians. The Gerbanites, a sect of astronomers, which flourished some centuries before Christ, held that after "every period of 86,425 years there was produced a pair of every species of animals, both male and female, from whom animals might be propagated, and inhabit this lower world. But when the circulation of the heavenly orbs was completed, which is finished in that space of years, other genera and species of animals are propagated, as also of plants and other things, and the first order of things is destroyed; and so it goes on forever and ever."* In these opinions, necessarily deduced from actual observation, we perceive the foreshadowing of a scientific cosmogony, such as we now possess. The Koran offers few speculations concerning cosmogony. It states that the whole creation was completed in six days; an idea obviously plagiarized from the Jewish Scriptures. According to it, the waters of the deluge issued from an oven; a conjecture said by Sale to have been borrowed from

* This fiction was well ridiculed by Aristophanes in his comedy of the "Birds."

* Lyell's Principles of Geology; vol. I., page 80—Amer. ed.

the Persian Magi, who represented them as issuing from the oven of an old woman.

ANIMALITY OF THE EARTH.

Among the ancients, Plato and the Stoics maintained that the earth is an animal. This wild conception was adopted by Kepler and others, by whom it was carried to the very extreme of absurdity. According to these theorists, the earth is an immense animal, whose breath issuing through volcanoes, its nostrils, cause winds. The tides are caused by the heaving of its vast lungs. On the Scheldt, at Antwerp, the tide once rested during a whole day, because the earth had a fainting fit; and again in 1550, at London it ebbed and flowed several times during twenty-four hours, because the earth had a cough. Throughout the globe a vital fluid circulates: a process of assimilation also goes on; each kind of mineral has the power of converting masses into its own nature, just as we convert food into flesh and blood: the mountains are its organs of respiration, and the schists those of secretion; the veins are sores, and the metals are the products of disease, which is the cause of the ill odor so common among them.

PHILOSOPHIC VIEWS.

It is a relief to turn from such extravagant misconceptions to systems deduced from careful and prolonged investigation. During the eighteenth century a more liberal spirit of study existed, and though theorizing without sufficient knowledge of facts still prevailed, yet the hypothesis advanced approximated much more nearly to the truth than the most of those offered in preceding centuries. The era of true progress may be said to begin with 1680, the year in which Leibnitz published his "Protogea," a work which did more toward laying the foundation of a scientific cosmogony than all of its innumerable predecessors.

In that work Leibnitz advanced the daring hypothesis that the earth was originally a fluid mass, whose gradual cooling produced the primitive rocks, forming thereby a crust, that afterwards by irregular contraction ruptured, causing great cavities. Into these the great ocean, formed

by condensation of vapors about the earth, flowed, and thereby lowered its level. The author investigates the subject of inundations, and shows that by the attrition of solid matter, which is subsequently deposited, the stratified rocks are produced. Whence he concludes there is a double origin of primitive rocks, one by cooling from igneous fusion, and the other by recondensation from aqueous solution. Thus in this masterly work we have the basis of every scientific classification of geological formations.

The general theory of a volcanic nucleus was accepted and ably defended by Buffon and Fourier, while many others of less note incorporated it with their vagaries. It is still a disputed question among geologists. Dana defends it, while Lyell opposes it,* to a considerable extent. Late investigations, however, seem to bend strongly in favor of a molten nucleus, and lead us to the belief that, allowing for every possible circumstance, the crust of the earth cannot be more than one hundred miles thick.

To dwell upon the innumerable theories offered by the mystic physicists of the eighteenth century, though it might be amusing, would be unprofitable. Toward the close of that century Hutton, a professor at Edinburgh, judging from the appearance of rocks in his vicinity, maintained that all formations were of igneous origin. At the same time, Werner, in Germany, judging from evidences there, held that all rocks were aqueous. The dispute between the disciples of these theorists filled the whole scientific world with strife. In 1807 the Geological Society was formed in London to investigate facts and discourage mere theorizing. From that time the science of cosmogony dates its origin. Facts have been carefully compiled and collated, and now we possess an exact knowledge. The hypothesis of Leibnitz, as enlarged by Laplace, sufficiently explains the origin of the so-called primitive rocks, granite, marble, etc., while the fossiliferous rocks undoubtedly result from the labor of animals, the decay of vegetable matter, and the action of water upon the primitive rocks.

* See Dana's "Manual," and Lyell's "Principles."

Thus, as briefly as possible, we have given the leading theories concerning our earth. We have seen the human intellect in its infancy groping amid the mire of ignorance and superstition, catching here and there a gleam of truth, whose wonder-

ful strangeness caused it to sink only deeper into its perplexities. But at length emancipated from its bondage, it grapples with great principles, investigates the hidden things of the universe, and distinctly asserts the laws of natural operations.

WHY LIGHTNING STROKES ARE PAINLESS.

NERVOUS TRANSMISSION.

IT is a mistaken notion that an impression upon the nerves—a blow, for example, or the prick of a pin—is felt at the moment it is inflicted. The nerves are not the repositories of sensation; they are but the conductors of the motion which produces sensation. The seat of sensation is the brain, and to it the intelligence of any injury done to the nerves has to be transmitted, before that injury becomes manifest in consciousness. The transmission, moreover, requires *time*, and the consequence is, that a wound inflicted at a portion of the body distant from the brain is more tardily appreciated than one inflicted adjacent to the brain. By an ingenious experimental arrangement, Helmholtz has determined the velocity of nervous transmission both in warm-blooded and cold-blooded animals. In a frog, he found the velocity to be about eighty feet a second, or less than one-thirteenth of the velocity of sound in air. If this holds good, which it probably does, in the case of a whale, then a creature of this class eighty feet long, if wounded in the tail, would not, as Helmholtz has remarked, be conscious of the injury till a second after the wound had been inflicted. But this is not the only ingredient in the delay that occurs between the impression on the nerves and the consciousness of the impression. There can scarcely be a doubt that to every act of consciousness belongs a determinate molecular arrangement of the brain—that every thought or feeling has its physical correlative in that organ; and nothing can be more certain than that every physical change, whether molecular or mechanical, requires time for its accomplishment. So that, even after the intelligence of an impres-

sion, made upon a distant portion of the body, has reached the brain, a still further time is necessary for the brain itself to put its house in order—for its molecules to take up the position necessary to the completion of consciousness. Helmholtz considers one-tenth of a second necessary for this purpose. Thus, in the case of the whale we have one second consumed in the transmission of intelligence through the sensor nerves from the tail to the head; one-tenth of a second is required by the brain to become conscious of the intelligence it has received; and, if the velocity of transmission through the motor be the same as that through the sensor nerves, a second would be consumed in sending a command to the tail to defend itself. Thus more than two seconds would elapse before an impression made upon its caudal nerves could be responded to by a whale eighty feet long.

Now, it is quite conceivable that an injury might be inflicted which would render the nerves unfit to be the conductors of the motion which results in sensation; and if such a thing occurred, no matter how severe the injury might be, we should not be conscious of it. Or it may be, that long before the time required for the brain itself to complete the arrangement necessary for the act of consciousness, its power of arrangement might be wholly suspended. In such case also, though the injury might be of such a nature as to cause death, this would occur not only without pain, but absolutely without feeling of any kind. Death, in this case, would be simply the sudden negation of life, accomplished without any intervention of consciousness. Doubtless, there are many kinds of death of this character. The passage of a musket

through the brain is a case in point; and the placid aspect of a man thus is in perfect accordance with the notion which might be drawn *a priori* from the experiments of Helmholtz. Cases of insensibility, moreover, are not uncommon which do not result in death, and in which the person affected has been able to testify that no pain was felt prior to the loss of consciousness.

The time required for a rifle-bullet to pass through a man's head may be roughly estimated at one-thousandth of a second. Therefore, we should have no room for doubt that sensation and death would be painless. There are other actions which far exceed in rapidity that of the rifle-bullet. A flash of lightning cleaves a cloud, appearing and disappearing in less than one-hundred-thousandth of a second; and the velocity of electricity is such as would enable it to travel over a distance equal to that which it takes the earth and moon in a single day. It is well known that a luminous impression once made upon the retina endures for about one-sixth of a second, and that this is the reason why we see a flash of light when a glowing coal is allowed to pass rapidly through the air. A flash illuminated by an instantaneous flash continues to be seen for the sixth of a second after the flash has become extinct; the body thus illuminated becomes motionless and appears at rest at the place which it occupied when the flash fell upon it. A color-top is familiar to most of us. It is an instrument a disk with differently colored sectors is caused to rotate rapidly; the colors blend together, and if they are in the proportions necessary to form white light, the disk appears white when the motion is sufficiently rapid. Such a color-top in a dark room, and illuminated by an electric spark, appears motionless, each distinct color being clearly seen. Mr. Dove has found that a flash of lightning produces the same effect. During a thunder storm he put a color-top in motion, and found that the flash revealed the top as a motionless object, with colors distinct. If illuminated solely by a flash of lightning, the motion of all bodies on the earth's surface, as Dove has remarked, appear sus-

pended. A cannon-ball, for example, would have its flight apparently arrested, and seem to hang motionless in space as long as the luminous impression which revealed the ball remained upon the eye.

If, then, a rifle-bullet moves with sufficient rapidity to destroy life without the interposition of sensation, much more is a flash of lightning competent to produce this effect. Accordingly, we have well-authenticated cases of people being struck senseless by lightning, who, on recovery, had no memory of pain. The following circumstantial case is described by Hemmer. On the 30th of June, 1788, a soldier in the neighborhood of Mannheim, being overtaken by rain, placed himself under a tree, beneath which a woman had previously taken shelter. He looked upward to see whether the branches were thick enough to afford the required protection, and just then was struck by lightning, and fell senseless to the earth. The woman at his side experienced the shock in her foot, but was not struck down. Some hours afterward the man revived, but knew nothing about what had occurred, save the fact of his looking up at the branches. This was his last act of consciousness, and he passed from the conscious to the unconscious condition without pain. The visible marks of a lightning stroke are usually insignificant: the hair is sometimes burnt; slight wounds are observed, while, in some instances, a red streak marks the track of the discharge over the skin.

The effects of a shock of artificial lightning on a gentleman of our acquaintance, who is very sensitive to the electric discharge, may be here described. Under ordinary circumstances, the discharge from a small Leyden jar is exceedingly unpleasant to him. Some time ago he happened to stand in the presence of a numerous audience, with a battery of fifteen large Leyden jars charged beside him. Through some awkwardness on his part, he touched a wire which should not be touched, and the discharge of the battery went through his body. Here life was absolutely blotted out for a very sensible interval, without a trace of pain. In a second or two consciousness returned; the recipient of the shock saw himself in the presence of his

audience and apparatus, and, by the help of these external facts, immediately concluded that he had received the battery discharge. His *intellectual* consciousness of his position was restored with exceeding rapidity, but not so his *optical* consciousness. To prevent the audience from being alarmed, he observed that it had often been his desire to receive accidentally such a shock, and that his wish had at length been fulfilled. But while making this remark, the appearance which his body presented to him was that of a number of separate pieces. The arms, for ex-

ample, were detached from the trunk, and seemed suspended in the air. In fact, memory, and the power of reasoning, appeared to be complete long before the optic nerve was restored to healthy action. But what we wish chiefly to dwell upon here is the absolute painlessness of the shock; and there cannot be a doubt that in the case of a person struck dead by lightning, the passage from life to death occurs without consciousness being in the least degree implicated. It is an abrupt stoppage of sensation, unaccompanied by a pang.

THE FRENCH SYSTEM OF TEACHING DRAWING.

NO system of education can be considered complete which does not aim to instruct and develop the senses of hearing and of sight. Attention to the cultivation of the latent powers of childhood, in the sister arts of music and of drawing, is therefore equally necessary in all properly constituted educational establishments. The first instructions on sound and observation are given by Nature herself, and in her ever open book the primary lessons are always first studied and practised. If music is needed to draw forth and exhibit the delicate powers of the ear, drawing is equally necessary to elucidate, correct, and strengthen those of the eye. If the former is the most ethereal, the latter is certainly the most useful. It is difficult to say which is the most ennobling, both appearing in, and justly taking their proper places at the head of the advanced guard of the civilization of mankind.

It is true that music has already had her claims acknowledged, and is now admitted to be an indispensable requisite both for harmonizing, regulating, and disciplining the children of our public schools. It is not the first of her triumphs. The mind naturally reverts to the period of the first discovery of this continent, when Pizarro found the most arduous labors cheerfully performed, at her behest, by the people of Peru. Penetrating still deeper into the

minists of time, we hear again the cheerful songs of the harvest men, and the various handicraftsmen of the classic land of Greece—their mournful Linos—or joyous Hymeneas—or see her warriors again marching to the plain of Marathon

“In perfect phalanx, to the Dorian mood
Of flutes and soft recorders,”

to triumph over the countless host of the barbarians.

But the sister art of drawing, the mother of architecture, painting, and sculpture, the grace and beauty, the dignifier and exalter of all civilized life, which was in the same land equally honored, and whose more material footprints there are better preserved and attested in thousands of “marble memories,” still waits, at the threshold of many of our institutions of learning,—an almost unwelcome guest. The reason for this, it is submitted, is, that music can be taught in classes, whilst drawing requires also careful individual instruction. This demands a greater outlay than the nation or State is willing to grant, and therefore it prefers to submit to receive the main portion of its designs from Paris or London, rather than to originate them in America.

In order to remedy this as far as linear drawing is concerned, a well-known publishing house proposes to issue a series of

books, each containing twenty carefully drawn and graded copies, from a straight line upward, ruled on the principle which has long been in use in the Government Schools of Design in France, which will lead pupils, by easy gradations, to a knowledge of and some proficiency in the art of design. The first numbers issued will be of the size of a common writing-book. Very few rules will be given, and it will be necessary that those given shall be strictly attended to. It is hoped that in these, teachers who are not themselves proficient in the art, will yet be able to correctly instruct youth therein, from the simplicity with which they will be illustrated, and the ease of the gradations by which success is believed to be attainable. Correctness in pencil or crayon drawing consists merely in being able to make a true straight line, or a true curved line; when this is acquired, and the eye is instructed to comprehend and the hand to execute this operation without failure, proficiency in linear imitative drawing is attained.

As a matter of philanthropy, this art should be introduced into all our primary schools. To all children under ten years of age rapid variation in study is both requisite and beneficial. The eye, the ear, the hand, and the mind of such demand and revel in constant instruction. To them change is relaxation. When it is considered in how many branches of edu-

cation drawing is almost a requisite, and how useful and necessary it is in the fields of labor, art, and science, it must be admitted that any one who succeeds in preparing or pointing out an easier road to proficiency in the use of the crayon or pencil, will have effected a very great desideratum.

The primary department of our public schools is thus particularized for the reason that it is believed that drawing, like elocution, is a plant indigenous in civilized society, and that very great results might be expected from its early and continued cultivation. Grace is, to most children, a natural gift: unused and often unnurtured in our schools, it droops, withers, and decays. The desire to imitate the form and color of any striking object, is almost universal among little children. After a lapse of years, during which these gifts have been neglected, is it to be wondered at if noxious weeds only are to be found in the places once occupied by these tender plants, which, had they but been early and properly cultivated, might have rewarded the world with their fruits? These thoughts are not submitted as original ideas, for they may be found largely developed in many modern works, and are now exemplified in some modern systems of education. They are merely suggested as elucidations of the necessity of early attention to the training of children correctly in the arts of imitative drawing, coloring, and designing.

THE STORY OF PETER PEDAGOGUS.

A SWISS SCHOOLMASTER OF THE OLDEN TIME.

CHAPTER II.

HIS FIRST TEACHER.

MY first teacher was old and ugly. He was fond of snuff, and took frequently of gin. His income was very small. To eke out this he carried on the cooper's business—the school, in winter, being his workshop.

He was considered clever, for he could measure hay, and even write letters and

testimonials for the peasants. In his teaching there was not much method. His pupils, in the morning, learned the lessons which they had to repeat to him. He took little trouble with the lessons, for he had one or two adjutants to do the most of the work.

Of order there was none—the deficiency being made up by much whipping. There was no respect for him. The boy who could annoy him most was the hero of the

school. Many tricks were played upon him: his wide coat pockets were filled with pebbles; his snuff-box emptied and filled with sand, and nails were driven in the planks which he had to saw. When he fell asleep, which was often, the usual hubbub gave way to silence. The depth of his slumbers was tested by dropping a slate. If this did not arouse him, then a council of war was held; and they proceeded to tie him fast to his chair, blacken his face with ink, or put pitch in his hair. This done, all retired from the scene. The next day the master, without making any attempt to find out the ringleaders, used the rod with marked emphasis. And a certain few of the more enterprising boys received a liberal share of the blows.

For my own part, I rather sympathized with the master, and took no part in these tricks. I learned my lessons, and gave him as little trouble as possible. He seemed to appreciate me, and boasted that I had "brains enough to be a schoolmaster." He taught me many things which were not taught to the other boys; and when I could read "with the book upside down" he made me his assistant.

Finally, when I had resolved to abandon the innumerable hardships of my father's house, this kind old man aided me in finding a situation as teacher.

HIS FIRST EXAMINATION.

My first attempt was to secure a school in a neighboring village. It was none of the best; but I was anxious to make a beginning. The day for the examination of candidates was fixed. My old schoolmaster concluded to accompany me, to see that justice was done, but more especially to prove his importance in spite of the young "new-fangled teachers," who treated him with disdain.

As for me, I had not entered the doors of any new-fashioned school, such as had been introduced since the French came amongst us, and in which nothing was learned but haughtiness and worldly things. He would, nevertheless, bet a trifle that I excel them all. This I owed all to him alone, and not to an Immoral School, or whatever else the concerns were called. Still, he continued, if I should chance to

be asked any thing which I could not answer, I had only to look at him, and he would give me a wink or whisper it into my ear. I need not be afraid so long as he was at my elbow. The minister was his particular friend, for he had once stood beside the reverend gentleman when he was buying tobacco at the apothecary's. The school commissary he also knew well. He had one day changed horses at the Cross of Langenthal, when he (the old man) was standing at the inn door, and had kindly wished him a good evening. True, it was morning at the time; but such great men are not supposed to know what o'clock it is. Anything he told these gentlemen they would take for granted, quite as much as if they had seen it in print; they knew their men, and knew whom they could trust. The examination was only a stupid formality, the recommendation was the grand thing, coupled with the good opinion of the authorities themselves.

Going along, my mentor gave me instruction in deportment, showing me how I was to salute the examiners. Unfortunately, in illustrating a bow, his iron-heeled boot, which he struck out vigorously, came in contact with my shin bones, and almost disabled me.

He repeated to me the terms by which I was to address the gentlemen. I recollect now, as well as if it were yesterday, the difficulty I had in pronouncing the words Reverend Mr. Schoolcommissary, and how the old man laughed when I said Reverend Mr. Schoolmilitary. The term commissary had till then been perfectly unknown to me, and the peasant tongue reluctantly articulates foreign terms, probably from instinct, knowing that things from abroad are not always wholesome.

Whilst I was thus being initiated into the mysteries of etiquette, we arrived at the village. Being rather late, the gentlemen were no longer at the parsonage. They had gone to the school-house, and were already engaged with the candidates, of whom there were seven. I began to feel a little heavy at heart: not so my companion, who, marching boldly into the midst of the party, supported by his long stick, saluted the examiners with bows

and titles, shaking them all by the hand, as if they had been old acquaintances; then, beckoning me forward, introduced me with a consequential patronizing air, as a youth that would please them, and who was almost as clever as himself.

In accordance with my morning's instructions I made a bow and a scrape, but fairly broke down at the titles. I could not for the life of me recollect whether I should say Rev. Mr. Schoolmilitary or Rev. Mr. Schoolcommissary.

After the names of the seven candidates had been written in the usual way, the examination commenced. The reading I got over beautifully and effectively, giving the vowels and final syllables a fine full sound, as if an *o* had been standing before each of them. The examiners seemed highly pleased with this performance, for a smile rested on their countenances. The answers to questions out of the Catechism also went off very fairly, and things wore a promising look; but, unfortunately, the man had told me to maneuver so as to get the topmost seat; for, said he, the first candidate always gets the appointment. I had managed accordingly to get the top seat, but had to pay somewhat dearly for the mistake, my position making me the first person questioned.

After the catechising, the children's Selections from the Bible was taken up, and I was asked to explain the fortieth history of the Old Testament. I began by asking the question: Who was Adam and Eve? for my schoolmaster had told me that it was always wise to begin with three leading personages, as they afforded greater scope and a wider range. The school-commissary, however, stopped me at once, which appeared to me very unbecoming, since surely at an examination the candidate is justified in showing himself off to the best advantage. He said I must stick to the subject, for if I always began with Adam and Eve (I had only done so once before), they would have to pray for a Joshua to arrest the progress of the sun. All laughed at this sacrilegious remark; and I, being thoroughly perplexed, had nothing more to say.

"Now," said the commissary, "let us hear you construe. That, after all, is the

main point: when any one has properly construed a sentence, he is pretty sure to have some conception of its meaning."

I stared at the speaker with open mouth. I had not the slightest idea what construing was, the word not having yet been introduced into my vocabulary. "Go on," continued the commissary impatiently; "look into your book, and construe the first sentence you come to, there is nothing printed on my nose for you to look at."

It occurred to me that construing might be a French word signifying "to spell," and that the gentlemen merely wished to air their learning a bit; so I began to spell out lustily the words in the book before me.

"Do you understand your own language?" inquired the commissary.

"Yes I do, Rev. Mr. Schoolcaptain," replied I.

"Well then, construe," said he.

"I have spelt, sir," said I.

"Do you understand your own language, I ask again?" exclaimed the commissary angrily.

"Yes, Rev. Mr. Schoolmilitary," replied I; "but I do not understand French."

This brought out a peal of laughter from all and sundry, in which even the other candidates joined. I then felt that I had put my foot in it somehow, and that all chances of success had departed.

We were next set to try our skill in composition; and here again I was at fault. Nobody had ever told me that writing was used for any other purpose than making small letters and capitals; it had never occurred to me to write words from memory, and no one had ever hinted to me that such a thing would be requisite. I looked, therefore, at my neighbors, and they looked at me; but all our slates remained empty. One only, pretending to be more skillful than the rest of us, put something down. Luckily, the gentlemen went off to dinner, leaving us to accomplish our task at leisure; thinking, perhaps, that our empty stomachs, acting in inverse ratio to our heads, would prove expert prompters.

After the gentlemen left, the spectators gave us what assistance they could, which did not amount to much; but they joined us in grumbling at being put to such tests.

and that schoolmasters were required to know such things. It was quite unexampled in the recollection of the oldest person present. Each candidate had written a few lines, and the gentlemen, on returning, glanced over them; but we could see that our work did not excite much admiration.

Arithmetic was limited to finding the cubic contents of a haystack; and then we were tested in singing. Each of us had to intone the *ut, re, mi*; and, loudly as we bawled, the commissary, with his hand behind his right ear, stepped close up to us, and, holding his ear close to the singer's mouth, received many a vigorous roar into it. Why he put himself to this inconvenience it is hard to say. He seemed to have no ear for music, yet he affected a critical air, and made eyes as if he had got the spleen. After the singing had gone round,

he asked me, with a pompous mien, whether I could tell him the difference between figural and choral music. To this, of course, being more French, I could not reply in the affirmative. But, by this time, I had got a little more cunning, and, taking advantage of a stratagem often resorted to in school, answered that I knew the difference, but could not express it in words. This answered the purpose extremely; for the commissary afterward put his questions so as to elicit either yes or no. This way I got on amazingly well, though I understood nothing whatever of the subject.

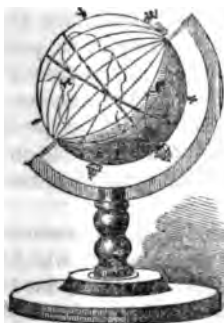
For all that, I did not obtain the appointment. The school was given to one of the other candidates. I had, however, learned not to go up for examination again till I knew the difference between construing and spelling.

A FEW PROBLEMS ILLUSTRATED, FOR PUPILS.

THE importance of the new magnetic globe as an educational aid is too great to be passed unnoticed in these pages. Many points concerning the shape and motion of the earth, day and night, gravitation, up and down, centrifugal force, etc., are generally incomprehensible to the child. These can be clearly illustrated by the use of this globe and its accompaniments. We will present a few, in language suited to the pupils of our schools. Many more can be easily made, all of which will prove profitable and amusing.

THE SHAPE OF THE EARTH.

In the small box which accompanies PERCE'S MAGNETIC GLOBE, will be found a



number of figures of men, animals, ships and steamers. Place some of these objects on the surface of the Globe, and see how curiously they adhere to it, wherever they are placed. The Magnetic Globe, you observe, is round,

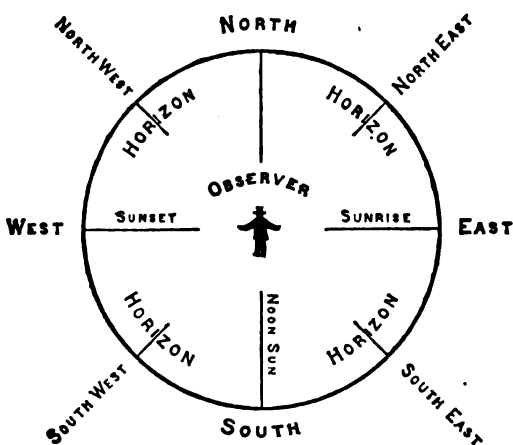
or spherical. The earth on which we live is also spherical, or nearly so. In old times, people thought it was a great level plain, surrounded by water—some thought it was shaped like a large drum—none believed it was spherical, or round; and all thought it stood still, while the sun, moon, and stars revolved around it. But in later years men sailed quite around the earth. A Portuguese, named Ferdinand Magellan, was the first who made this wonderful voyage. He sailed from San Lucar, in Spain, on the 20th of September, 1519, and directed his course toward the west. Here we will say, that the wire which passes through the Globe represents an imaginary line drawn through the earth from North to South, called the *axis* of the earth, because the earth turns on that line, the same as the Globe turns on the wire. The center of the circle at the top of the Globe is called the North Pole; and the center of the circle at the bottom of the Globe is called the South Pole. If you can imagine the little Globe suspended in the air, revolving freely *without* the wire, as it does *with* the wire, then you can imagine how the Great Globe on which we live revolves in space on its axis. Place a figure of a man on the equator, with his

face toward the North Pole. His right side then is toward the East; his left toward the West. He faces the North, and his back is to the South.

Here is a diagram which will explain this very clearly. Now, having learned about North, South, East and West, we will follow the course of Magellan on his voyage around the world, with the aid of the Globe and Objects. Place a light-house in the south of Spain, near the sea-coast. Magellan sailed for a long time toward the West, and reached a safe harbor on the eastern coast of South America, in Patagonia, which he named Port St. Julian. Next he sailed south, and entered the straits at the south of Patagonia, which bears his name. (Place a Magnetic Object at the eastern entrance of the Straits of Magellan.) Having cleared the Straits he stood out boldly into the great expanse of an unknown Ocean. After a long voyage to the northwest, he reached the Philippine Islands. (Here place an Object.) The weather was so fine that he called this ocean the Pacific. Magellan landed on one of the Philippine Islands, where he was received by the natives in a friendly manner, but they afterward cruelly murdered him, and as many of the Spaniards as were on shore. Those in the ships set sail in all haste, and continued on their voyage toward the south, through the Malay Archipelago to the Moluccas, or Spice Islands. At one of these islands, one of the ships remained to repair. The other sailed to the southwest, through the Indian Ocean, and around the Cape of Good Hope, at the southern extremity of Africa. (Here place another Object.) Then they sailed north along the western coast of Africa (place one more Object on the West Coast of Africa, a little to the north

of the equator), until the 6th of September, 1522, when they arrived in Spain, near Seville, the point from which the ships had sailed three years before. Thus was completed the first

voyage around the globe. The good ship was drawn ashore, and long preserved as a monument of this most remarkable voyage. The fact that the earth is round, at least from east to west, was clearly established. Now we will try



an experiment to prove the rotundity of the earth from north to south. We have seen that navigators have sailed quite around the earth from east to west, but they have never been able to do this from north to south. Having removed all the objects from the globe, we will take another, representing a light-house, and place it at San Francisco, California. Next place a ship on the Pacific Ocean, to the south of San Francisco, at that point on the globe where it will be concealed by the roundness or convexity of the earth's surface, from a person whom we will suppose to be in the light-house. We have to place it away to the south of the equator; but you must know that although we can see but a few miles of the earth itself, yet our globe is a very little world, and we can see what represents a great many miles on it at one view. When you are told that the smallest grain of sand placed on the surface of this globe is higher, when compared with the size of the globe, than is the highest mountain-peak of the Andes when compared with the size of the earth, you can readily see why we have to place the ship so far away, to hide it from the light-house by the convexity of the globe. To return to our experiment. You will see that when the ship is drawn toward the light-house, the top of the mast would first be seen from the light-house; and the

top of the light-house would first be seen from the ship. As the ship approaches, she rises gradually to the view of the observer in the light-house, while in the same manner the light-house is seen from the ship gradually rising to the view of the sailors. This will happen, whether the ship approaches the light-house from the north, south, east, or west. As it appears on our little globe before us, so it appears on the earth itself. No matter from what point a ship sails, when she is coming toward us we first see the masts and rigging, and at last the hull. If she is sailing *from* us the hull disappears first, and the last we see of her is her top-masts, sinking, as it were, beneath the waves. These facts prove conclusively the rotundity of the earth.

SHADOW EXPERIMENTS.

You will find drawn upon the globe, a little to the left of the continents of North and South America, a curious diagram. Its centre is at the equator, and it extends north and south, within the limits of the Torrid Zone. It shows the various points of the earth's surface where the sun is vertical or directly overhead at noon-day, and the days of the month in each year on which the sun is vertical at each point. This diagram is called the *Analemma*, a Greek word meaning altitude or height. On two days, the 20th of March and 30th of September in every year, the sun is vertical at noon on the equator, and at that hour on those days all perpendicular objects on the equator will appear to cast no shadows. Their shadows, in fact, are hid by their own bodies, for, if they should be lifted up we would see their shadows directly beneath them. Of course, in the morning, their shadows would be cast due west, and in the evening due east. We will try a little experiment with the globe and objects, to illustrate the rotundity of the earth from north to south by means of shadows. Place an object representing the Ethiopian, if you please, on Lake Victoria Nyanza at the equator in Africa. This is the source of the Nile lately discovered by Captain Speke. Now, place another object representing a lion, in Nubia, on a line north and south with the Ethiopian, and place a third object, an ele-

phant, to the south of the equator near Lake Nyassi, in a line with the two other objects. Place the globe either in the light of the sun, or of a lamp, in such a manner that the Ethiopian on the equator will cast no shadow, or, as it were, so that his shadow will be directly under him. The light now is vertical to the African, and its rays fall upon the equator of the globe the same as the rays of the sun fall upon the equator in Africa when the sun is vertical at that point. Observe next the direction of the shadows of the other objects. That of the lion is cast toward the north; that of the elephant toward the south. And so it is on the earth. When the sun is vertical the shadows are invisible, while those living to the north cast their shadows toward the North Pole; and those living to the south cast their shadows toward the South Pole at noon. To prove this would not be the case if the earth were flat, take a piece of sheet-iron, and place the three objects upon it, at the same distance apart as they were on the globe. Now hold them in the light in as nearly as possible the same direction, and their shadows are all cast the same way!

UP AND DOWN.

Place an object representing a European on the globe at London, in England, and place another object on the Antipodes Island, a little to the southwest of New Zealand. You see that their feet point downward toward the center of the earth, and toward each other. If they could descend until they reached the center of the globe, their feet would touch; but should they be brought back toward the surface of the globe, they would be going upward, and if they had the power of flight they could go in opposite directions forever. "Down," therefore always ends at the center of the earth, "Up," diverges into the unlimited space of the universe.

DAY AND NIGHT.

Place a magnetic object in the center of Africa on the equator; place another object at Quito, in South America; another on the Island of Sumatra; and another, representing a ship, on the equator in the Pacific Ocean north of Navigator Islands.

Place the globe in the light of a lamp so that the shadow of the man in Africa is invisible. The light now falls on the globe the same as the light of the sun falls upon Africa at noon-day. We will say, therefore, that it is noon with the man in Africa. Now, if it is noon with the man in Africa, what time of day is it in Quito, in Sumatra, and on the ship? If it is noon with the man in Africa, the sun must be over his head, and the inhabitant of Quito must see the sun rising in the east; at

Sumatra the sun is setting in the west, and it must be midnight with the ship. Revolve the globe slowly from west to east. Soon it is noon at Quito; morning on the ship; midnight at Sumatra; and evening in Africa.

In this manner the changes of day and night continue on the earth. The sun is rising and setting continually on some portions of the earth. While some are enjoying the wakeful daylight, others are seeking the repose of night.

EDUCATING BY MACHINERY.

THE papers report that at the establishment of Messrs. Chambers, publishers, London, Mr. Alfred Long, in the presence of some fifty ladies and gentlemen, recently exhibited an apparatus and explained its adaptability for teaching languages, music, and other branches of education. The "Patent Metabolical Machine," the title which Mr. Long has given to this piece of mechanism, is an adaptation of the kaleidoscope principle, very similar in appearance to the old lottery-wheel, and is constructed so as to present to the eye an endless succession of musical combinations, or of sentences in grammatical or idiomatical form. These are produced by the inter-

changing of the words on the bars, which have been previously selected and arranged according to a certain formula, and then written upon the faces of little cubes. The machine was originally devised to illustrate the method set forth in Mr. Prendergast's work on the "Mastery of Languages." The beginner commits to memory two foreign sentences very perfectly. The English translations are inserted into the machine, and whenever it revolves a different variation of the words appears at certain openings in the instrument. The system requires that the learner shall go on translating these variations until he shall have obtained the "mastery" over them.

MANUAL DEXTERITY.

WHILE the brain of mankind is invigorated and educated by correct study and discipline, the other parts of the body, more particularly the hand, and some organs, as the eye, can also be trained to tasks which, at first thought, seem wonderful and impossible. There is no labor to be done, no skill in artificing or fashioning the metals, that is beyond our reach. Even jugglers, who have no trade, depend upon digital swiftness, or the slight of hand, to perform their "miracles" successfully; and the safety of rope-dancers depends not merely upon their balancing poles, but

upon the degree of education they have imparted to their feet. If in such callings as these, wherein the sole object is to please the multitude, the culture of the members and organs of the body is essential to success, may we not say that in the mechanic arts, upon which such important issues now hang, manual dexterity is now indispensable? This, allied to intelligence, is what makes first-class workmen. It is by no means to be despised, for excellence in this respect is attended by many other qualities which are of the utmost service in the trades.

AMERICAN EDUCATIONAL MONTHLY.

OCTOBER, 1865.

"RECONSTRUCTION."—THE EDUCATIONAL BASIS.

NOW that the war for the Union is ended, the question of "reconstruction" is all-absorbing. How shall the States be brought back to their allegiance and to the discharge of their appropriate duties as members of the national family? How shall the good spirit of fraternity be made to take the place of the evil spirit of discord? How shall the asperities engendered by the great conflict be softened, and our people in all sections be led to regard each other with that feeling of mutual confidence and affection so indispensable to the unity, prosperity, and permanence of the republic? These are grave questions, and they are "more easily asked than answered." But they confront the American people at every turn of public affairs, and they challenge the most serious attention of the highest statesmanship. Great have been the burdens and sacrifices of the war. Gigantic have been its labors. Complicated and difficult have been the problems which it has forced upon us for solution, and the nation has at times "hung breathless on its fate," in view of them. And yet the difficulties which a state of peace has thrown upon us are not a whit the less perplexing than are those which we have, through much tribulation, succeeded in mastering. The problems of the war were those which refer to the marshaling and wielding of material resources in such a manner as to establish the authority of the government. The problem of peace is how best to deal with the subtle forces of the human heart, how to calm the rage of excited passions, how to allay the pangs of wounded pride.

We are not of those who believe that to heal the maladies of this nation is the work merely of a day. For generations has the virus been at work. The antagonistic principles have from the beginning coexisted in our national life, and each has struggled to gain the mastery. At last the hour arrived when either one or the other must assert its supremacy. The nation must live or die. It chose to live, and it has vindicated its right to life. But the disease itself being chronic, can be finally eradicated only by a thorough treatment. The leaders of the rebellion and those who have contributed their material aid and moral support, will never again become reconciled. It is not in the nature of the human heart that they should.

There are, however, other classes who can be reached by a far-sighted, comprehensive, and liberal policy. Before they can be made good and loyal citizens they must be made intelligent, and capable of appreciating the blessings of freedom. No reconstruction can be real and substantial which leaves this out of sight.

The process of reconstruction must necessarily be slow. Years, perhaps generations, must pass before it can be complete. Measures should be at once taken to secure sound and wholesome instruction to all who are hereafter to exercise an influence in shaping the destiny of the republic. Each State should provide for the education of all its children. The Constitution of the United States guarantees to every State a republican form of government. Universal education is conceded to be indispensable to the existence of a republic. Let American statesmanship rise to the full measure of its duty by recognizing in its policy of reconstruction this truth, so fundamental in its relations to our future prosperity and happiness as a people. Universal loyalty is the product of universal education. This nation can never be firmly united in the bonds of liberty, equality, and fraternity, until the spirit of these

"better angels" is made universal through the national schools. That statesmanship is very short-sighted indeed which closes its eye to this stubborn fact.

THE HARRISBURG CONVENTION.—EDUCATIONAL UNIFORMITY.

THE National Teachers' Convention, recently held in Harrisburg, was numerously attended. Some of the leading educators of most of the Northern States were present: the governors of Pennsylvania and Maryland, and other non-professional friends of education, took part in the proceedings, and an earnest, almost enthusiastic, spirit was evinced, which will for a long time exert a beneficial influence. Surely, *some* moral stimulant is needed. While in a few States the welfare of the schools is studied and provided for with a solicitude felt for scarcely any other interest of the commonwealth, in others there may be discovered a listlessness in the general management of the school system, and a crudity in the practical modes of instruction, which must be regarded as but little worse than utter neglect. Many States are without school journals and normal schools; in some, proper school officers are unprovided for, and in not a few there is found only a nominal system of instruction. In various directions, reforms should be instituted without delay.

And while about it, while the recent proceedings are still under discussion, let the prominent feature of the recent convention be steadily held in view. We should have greater uniformity of instruction,—a national system of education. We know that in the effort to effect this desideratum, our truly great men, our thinkers, workers, and leading educationists, begin a heavy enterprise; but it is a noble one. Like all great enterprises, faithfully prosecuted, it will pay a handsome dividend; the result will be a liberal

compensation. Swamps, forests, rivers, mountains, are no impediments in the line of a continental railroad. The telegraphic cable must be carried across the ocean; or if fleets fail in the enterprise or are lost in the undertaking, the North Pole itself will be conscripted into the service and virtually constitute one of the telegraphic poles of a grand overland line of communication, *via* snow-hills and icebergs. And our national intelligence, our American thought, which it is manifest only the lightning can transmit with sufficient rapidity, must have some correspondingly liberal treatment, some scientific continuity of manipulation. It must not be dwarfed and weakened by senseless unscientific pedagogism. Now is the time to act. This is the propitious era of reform. Education is not a stationary engine; it is a locomotive which draws only while it moves. Systems of instruction must be essentially progressive, or they will ultimately be mere clogs and barriers. While the world moves, let not the schoolmaster stand still.

A POETICAL ANATHEMA.

WE have heard vituperation in various forms, we have heard maledictions manifold, from suppressed mutters to curses "loud and deep." We have read the fulminations of the Romish vicegerent of the Almighty, in the magniloquent and bitter imprecation of *Anathema Maranatha*. But never have we heard or read any thing transcending the studied malevolence embodied in a single lyric—in two smooth lines of a rhyming stanza—induced by our recent political complications. The spirit of malevolence is incarnate. There has been too much of imprecation on the part alike of the North and the South, and we present the passage referred to, not with the view of inciting any incipient hero to blasphemous patriotism, but as a literary curiosity, showing condensation of

thought and feeling, and exhibiting the capability of our Saxon tongue. We give the stanza entire.

For this our curse do we bequeath
To Albion, hated foe!
The sword she caused us to unsheath,
Already meditates *her* death,
And vows *her* heart a blow;
We curse her with our *deepest* breath,

Curse her for war and woe—
Curse her at every loyal hearth—
*Curse every rod of her green earth—
With every blight we know.*

* After reading this who can say that David's "cursing psalm" has not an equal, —who can deny that the holy psalmist has found his peer in the modern patriot-poet!

EDITORIAL CORRESPONDENCE.

THE GERMAN THEORY OF EDUCATION.

HEIDELBERG, Sept. 2, 1865.

IN my last letter I gave some account of German schools, in connection with the great and world-renowned Orphan Asylum of Halle, an institution which has so far out-run its original purpose that now the day-schools which it affords to the children of that city are among the most celebrated in Germany. I am tempted to devote the first of this letter, at any rate, to some remarks on the educational theory prevalent in this land, and to some general observations which may grow out of them.

The fundamental idea which obtains in Germany is that each branch of employment requires, on the part of those who carry it on, a certain amount of intellectual development, or education, which if fallen below or risen above, becomes detrimental. The blacksmith needs to be educated up to this point, the lawyer to that, the schoolmaster to yet another. To be over-educated is considered as serious a calamity as to be under-educated: and to know too much is thought to lead to a discontent, an unsatisfied ambition, and a roving mind, which are at entire variance with the tranquillity in which men ought to live. Superadded to this is yet another notion more false and fatal still, namely, that what the father is, that the son, without there be some paramount reason to the contrary, ought to be. The peasant's son must be a peasant; the shoemaker's son must be a shoemaker; the musician's son must be a musician. Now as the mother in more cases than the reverse gives her intellectual aptitude to the child, it follows that the nation which adopts this custom can never excel; its people do not rise to their natural level; often a fine cabinet-maker is spoiled to make an indifferent minister. This is a secret which we understand in America; we lay the whole great variety of trades, employments, professions, open to every young man, and we bid him study himself carefully, and then make his choice. No doubt mistakes are often made; men find

out their real aptitude too late, and both they and the State are losers. But there can be no proportion between the loss experienced from this in such a country as the United States and such a country as Germany. Here every village may have its "mute inglorious Milton," who spends his life in silence, and passes to an unhonored grave; but with us, if there be a natural poet, a true child of song, from the corner of the country newspaper he quickly finds his way to the "Atlantic," and honors without stint pour in upon him. Here he must live misunderstood, his life a wreck, his powers unsuspected by those who might have given a helping hand and a kindly word.

No language can do justice to the two evils which I have mentioned, and which go hand in hand, and are indigenous in a country where caste and feudal principles are still uppermost, as in Germany. In Great Britain there is a somewhat better state of things; but America is the only land in the world where it is hard to remain unknown, and unused, and unhonored, if God has blessed you with any special aptitude. Men find their level at once; and such is the ease of exchanging employments, that those who discover in middle life that they have chosen wrongly, do not feel compelled to follow on in a mistaken walk to the end, but quickly adapt themselves to that for which they have a natural gift. These are the elements in our American democratic character which we should prize as precious beyond all computation; it is they for which we have been contending during all the war, seeking to keep them ascendant, in opposition to the efforts to extend the feudal or caste spirit over the whole union, and extinguish a polity so rich in beneficent influences, not to our nation alone, but to the whole world.

In carrying out the notion, "like father like son," we have here various grades of schools, adapted to the different grades of the population. We find for instance Poor Schools, People's Schools, Citizens' or Burghers' Schools, and select schools of all degrees. This takes us up in the social scale to those

families which can afford to have their own teachers, and have their children instructed beneath their own roof. Contrast this for an instant with the American system, which puts no stigma upon poverty by consigning the poor man's child to an inferior school, but for the future good of the State admits him to equal privileges with the son of the millionaire. Can any thing be said for the German system in comparison? And where do we find in the United States that a blacksmith, a carpenter, a shoemaker, or a trader is unfitted for his employment because he may have enjoyed advantages beyond the winter district school? Is it not proved over and over that the higher the education the more efficient becomes the man? He may indeed set iron and wood, in the form of machines, to do the work which in his uneducated state he was content to do, but is that any infringement of the natural order of things or of the providence of God?

Happily the university is a protest against the German system. It receives on equal terms all who visit it, and calls them all its children. The prices paid for the privilege of hearing the lectures are so low that few need be debarred, and all libraries and scientific collections are opened on equal terms to the rich and the poor. So far as this can rectify the evils introduced by class schools it does so, but it is not able to cope with the whole evil. Besides, it introduces in connection with what has been said above, a body of men who are exceedingly well educated, but whose life is a burden to themselves and to their friends. What can the scholars of this country do, is the question which has to be met. Some can become professors, some clergymen, some lawyers, some doctors, some teachers of the higher schools. But these professions are all capable of being filled to that point where a surplus of men entails poverty upon some and struggle upon all. In this condition Germany stands to-day; and the case of a young man who leaves the university and hopes to enter upon a career of usefulness and success is pitiable. He can scarcely expect to marry till he is thirty-five, and through the first years of his professional career he must struggle through difficulties and discouragements of which we have happily little conception in America. But could the idea once be exploded that the merchant, the artisan, the common-school teacher, are all the better prepared for their occupations, even by a university education, if it is at their command, a more propitious day would dawn upon Germany. A week ago I walked down to the Heidelberg University to hear Dr. Mendelssohn, a private-docent, *i. e.*, a graduate who is permitted to lecture, and who looks forward to a regular professorship. His theme was the modern Greek Revolution. My interest to see and hear him arose not so much from the fact that he is a very scholarly young man, as that he is the son of the great musical com-

poser of the same name. I found myself listening to a written lecture, carefully studied and eloquently read, but delivered to an audience of two—one gentleman besides myself. And thus it is too apt to be the case. The number of men whom the universities send out are so ill-proportioned to the number of places put at their disposal by the public sentiment of the country, that a young man has to fight a battle most discouraging and protracted, before he wins a place and a competence. There are some prizes, but more blanks. I know German professors of European reputation who are maintaining themselves and families on less than five hundred dollars yearly; and yet there is one professor here, at Heidelberg, whose net income, aside from that which his books bring in, is eight thousand dollars. I would not willingly see the number and efficiency of the German universities lessened; they are the best, the most democratic, and withal the most Christian institutions in the land, but I would gladly see an explosion of the old idea, that men who are to work with their hands lose their efficiency if their minds be educated, and that it is as great a harm to a peasant to know too much as it is to know too little.

The more I see of the working of these universities, the more convinced I am of the great advantage which they enjoy, in presupposing that the youth who resorts to them has chosen his future avocation already, and will select his studies with reference to that choice. Much may be said in favor of the American college system in this regard, I am fully aware; it is, for example, indisputable that the object which our colleges hold up so prominently, that of giving a good general culture, independent altogether of the future walk in life of the person receiving it, is a noble one; but we are met by the stubborn fact that our students generally do not apprehend till it is too late the relation of this general culture to their future usefulness, and so lose its advantages, waste their time in college, fall often into idle habits, frequently leave before the four years' curriculum is complete, and almost invariably are pursued by the demon of discontent, bidding them hasten from the cloistered seclusion of the college for the busy scenes of life. And on the other side, it may be said that the German course favors a too early, an immature selection of a profession; that carrying out the idea that the son should be what the father is, it commits the young man while a mere youth to a choice which he may regret. But I think that this is the better of the two; for supposing him to make an error, he will, under our plastic institutions, easily change his course when he is older, and fit himself for the place for which nature intended him; and even while he is working with a goal in view, wrongly chosen let us admit, he works with an impulse, ardor, and devotion which will do much to

secure to him that general educational culture which it is the avowed object of our American colleges to impart. The German youth pursue their studies, I find, with a zeal unknown in our colleges, excepting where there is a powerful impulse given by the ranking system, and more *uniformly* strong than even that system gives. And this is done although the universities are on the same ground with our Theological Seminaries, Law, and Medical Schools, and all instruction is conveyed through the medium of lectures. Not that every thing in this German system is to be commended. The gashed faces of the students show that the dueling system is only too well retained; the swaggering air and the fanciful caps indicate how much vanity is fermenting and sending light bubbles to the surfaces of society; but as a whole the universities appear to be the feature of German civilization most to be admired, and with care to be copied. And those of our colleges which have adopted side-institutions, moulded on the German model, Harvard, Yale, Dartmouth, and Brown have done wisely, as I have confidence that time will show.

One of the most striking features of these German universities is their modest architecture. Take this one at Heidelberg, for example, one of the most celebrated of all. It is a plain building in the market-place; no heavy elms shade it, no gravel walks lead to it, no green lawn surrounds it. It is a great, sunny, simple building, and the rooms within are even less striking than the exterior. Yet here have stood in past times Voss, Paulus, Thibaut, Geromies, Schlosser, and Umbreit; and here stand now the scarcely less known Rothe, Hitzig, Vangerow, Bunsen, Häusser, and Schenkel. Of these last names Rothe is the most prominent theologian, Hitzig one of the most accomplished orientalists, Schenkel the best known neologist, Vangerow the first lawyer, and Bunsen the ablest chemist in Germany. And yet how simple the appliances which they need for their art, how unpretending the building where they hold their prelections! The simplicity is almost idyllic, and carries one back to primitive times. Oh, that in all lands we prized as much the reality and as little the false pretense as do the simple-hearted Germans, who are content with their modest accommodations!

W. L. G.

A TRIP TO THE COAL REGIONS.

NEW YORK, Sept. 2, 1865.

The Knickerbocker Colliery.—Mountain Rail-road,—The Coal Field.—How the Mines look.—Underground Life.—Need of Schools.

THE purest veins of the celebrated Lehigh coal are found near the summit of a range of mountains, in Schuylkill County, Pennsylvania. They are mined by the Knickerbocker Anthracite Coal Company,

which is organized on the "mutual" principle, each share making the holder a part owner of the coal region, bringing a fair dividend, and entitling him to receive annually a ton of coal at the mere cost of mining and shipping. The shareholders, consequently, represent various classes of the community, from the shrewd financier, seeking profitable investments, to the poor man anxious to effect a saving of from three to five dollars on each ton of coal. To exhibit to these various classes the actual condition of their property, their president, Dr. Hayes, the well-known explorer of the Arctic regions, lately invited a party of two hundred persons to an expedition to the coal regions.

Leaving New York just as the sunlight began to gild the heavens, we were soon on a special train dashing over the lowlands and across the rich fields of central New Jersey. Crossing the Delaware at Easton, the route was in a more northerly direction, affording a view of the mountainous scenery of Northwestern Pennsylvania. Crossing and recrossing the Lehigh River, which is almost constantly in view, the cars wind through mountain gorges, bold masses looming up and suddenly disappearing, hidden by other rocky hills, bright with foliage and sparkling with streams and cascades.

We thus dashed along, still at good speed, till we reached Mauch Chunk ("bear mountain"), a dwarf-town, the bounds of which have been determined by nature; for it is compressed into a gorge formed by the junction of three mountain ranges. The hills are here from five hundred to twelve hundred feet high. Mount Pisgah, the highest of these, on the base of which is built a portion of the town, is accessible by means of cars drawn up an inclined plane by a stationary engine. Leaving Mauch Chunk the iron horse loses speed. Up a heavy grade, up through ravines and gorges, up among rocks and boulders, wends now the train on its toilsome way. Our point of destination is only thirty-five miles from the station last passed: we have been hours on the way, but "the end is not yet." Presently, we make an abrupt turn toward the left, we find an engine laboring hard at each end of the train, a road running for miles around the sides of mountains is before us, in many places on embankments making one dizzy to look upon, and causing timid ones to grasp the car-seats and door-fastenings with a tight and nervous hand. But a fine panorama opens below, we are moving rapidly again, the ride is exciting, and in a jubilant mood we alight on the grounds of the Knickerbocker Company, giddy as school boys at a picnic.

We are at the border of a plateau, among encircling hills. The most striking object in view is a high building, one side of which is far up the hill, while the opposite side, constituting a covered inclined plane, extends for three hundred feet into the basin

, seeming like a ropewalk raised and by scaffolding. The structure is called the breaker, and includes the machinery used in drawing to the building the large lumps of coal from the mine, and for breaking, sorting, and loading for transport. The coal is at the mine made to cars holding about three tons each, thence drawn by an engine over the plane to an immense funnel at the breaker. It is then passed over the larger sizes falling through iron passages, to be reloaded for shipment; smaller pieces pass through crushing, and a series of revolving cylindrical sieves, till at length, having been freed of large and assorted in size, they gradually descend to their respective places as "stove," and "chestnut" coal.

"The mines!" "The mines!" was the cry, on a brief inspection of the machinery. "This way to the mines!" was the answer of the guide, and in a moment the party following along a footpath leading to an opening at the foot of a hill, resembling the entrance of an ordinary railroad tunnel.

Here occurred the memorable scenes of the expedition. "Wait a minute for the horses," shouted the guide, and he disappeared, returning toward the breaker. We waited perhaps a quarter of a minute, certainly no longer, and then we too disappeared, daintily endeavoring to keep upon our way, or railroad constructed for the horses. This was not easily done, and all were engaged in petulant murmurous laughter, or purposeless groping in undiluted darkness. The arrangement for ventilating the mine not having been completed, the foul and sulphurous air beginning to affect many, when a low ringing was heard far ahead. It rapidly faded, and a faint light was discernible, leading some one to conjecture the nature of the phenomenon. "Look out for the mules!" came the alarm. There was at once a strenuous effort to secure safe positions. "Clear the track!" shouted the driver, as a flock of carts dashed by, drawn by mules, the driver's blackened face being visible in the dim light afforded by a little lantern fastened on his hat. The track was quickly cleared, for only one step in the direction of safety was practicable, as the sides of the passage in which we had prematurely descended were, on either hand, only at a distance of one pace from the rails of the tram.

In safety once more, clustering and pressing together, the party was presently arrested by a deep boom suggestive of thunder and earthquakes. This was supposed to be a "blast," as we had been informed that one hundred kegs of powder are exploded every month in the working of the mine, which consists in drilling and blasting. Looking back toward the entrance, a light became more discernible. Our guide appeared, supplied with only a single lantern,

Then, following as well as we could, the exploration was resumed. Groping, grumbling, tumbling, splashing, on we went, now losing our equilibrium as we tread upon a lump of coal, and go ankle-deep into a pool of water, now apologizing to some half-distinguishable friend, who has lost his equanimity while searching for the hat which we unconsciously knocked from his head. On one side we scramble up a steep ascent, and view the miners at work, drilling and blasting. Then we resume our march through the tunnel, till we reach its furthest limit, hundreds of yards from the place of entrance, and from the surface of the hill over our heads. No striking objects have appeared. But whenever the lantern has been brought to the sides of the tunnel the coal has been found bright, hard, and pure, no stone appearing, and with only occasional intermixture of slate.

Our guide is here subjected to a catechetical ordeal. All sorts of questions are asked. Unsophisticated young man in pink cravat and white vest, illuminated with coal-dust, wants to know the difference between Anthracite and Lehigh. Funny fellow asks how many feet of coal is to be found between our own and those of the Chinese. Old gentleman with massive cerebellum wants to know why the works is not vigorously prosecuted, and all the coal taken out at once. We are here told that the vein extends for three quarters of a mile in the direction we have been pursuing; that the quantity of coal above water-level in this mine is more than a million tons; that below the water-level there is probably five times that quantity, which will remain unmined for ten or twenty years, as the mode of working will be more difficult and expensive.

Eight other veins have already been discovered on the lands of the Knickerbocker Company, several have been opened, some will require heavy timbering for support, where there is danger of the tunnels being filled up. While enjoying a substantial dinner at sunset, under the shelter of pine, hemlock, oak, and maple trees, the well-timbered hills around have a new interest, in view of the necessities for mining and building purposes, and the expediency of converting some of the trees into school-houses was suggested by facts not very creditable to the educational officers of the region. The various points investigated and discussed prove wholly satisfactory to the financiers, the novelty-seekers are gratified, soiled gloves and specimen coals are thrust into dusty pockets, overcoats are resumed, the day's work is done. The cars are refilled, the engine gives us a push and follows us at a distance of half a mile, while the train, without a guide or check, rolls swiftly down the embankments and natural declivities of the mountain, and we are soon on comparatively level ground, with a fair prospect of safely returning home, wiser and blacker men.

J. W. H. C.

EDUCATIONAL INTELLIGENCE.

NEW YORK.—There seems to be increased interest in the welfare of the schools in various sections of the State. In the city of New York arrangements have been made for the accommodation of additional numbers of pupils, and several school buildings have undergone extensive repairs. In the practical working of the schools much yet remains to be attended to.

PENNSYLVANIA.—The Seventh Session of the National Teachers' Association was begun at Harrisburg on the 16th of August, continuing three days. Various papers were read and discussed, addresses were delivered by distinguished educators from various States, and the following topics, receiving elaborate discussion, awakened unusual interest:—

"What service can this Association render toward the establishment of Free Schools in the States lately in rebellion?"

"The Relations of the National Government to Education."

"How to cure the Evil of Irregular Attendance at our Public Schools?"

The proceedings have been extensively noticed by the daily press, and are exerting a beneficial influence.

MARYLAND.—The School Commissioners from the various counties met in convention August 22-23d, electing as permanent officer, Lieutenant-Governor C. C. Cox, President; Dr. Joel Hopkins and Dr. S. A. Harrison, Vice-presidents; Hon. Thomas A. Bollte and A. W. Small, Secretaries.

Among the subjects considered were the following: 1. "Should the President of the Board of Commissioners be relieved from the duties of District Commissioner?" 2. "Shall quarterly meetings of Board of Commissioners be held on the Wednesday next succeeding the end of each term?" 3. "Plans of school-houses; consideration of those proposed by the State Board." 4. "School Furniture." 5. "Salaries of teachers; how calculated; manner of payment—whether directly by the treasurer or through the District Commissioners." 6. "Salaries of Commissioners." 7. "Mode of distributing text books."

After resolutions asking the Legislature to amend the new school law so as to include those sections of the old law referring to compulsory attendance of pupils at school, and the imposing of penalties for employing children in factories, etc., who are not allowed to attend school, and that the fines for the above offense, as well as for other offenses named in the old law, be expended for school purposes, it was

Resolved, That this Convention resolve itself into an association to be known as the Association of the Commissioners of Public Schools of Maryland, and that, when

it adjourns, it shall adjourn subject to the call of the officers; and that a committee be appointed to prepare a suitable constitution, with by-laws, for the government of the association."

The efficient State Superintendent, Rev. L. Van Bokkelen, was actively engaged throughout the session. The deliberations seem to have been harmonious and enthusiastic, and to indicate brightening prospects for this disenthralled State.

— Prof. Thomas Lucy, an efficient worker in the cause of education in Maryland, has recently removed from Elkridge Landing to Baltimore. His new relations are with the Baltimore Female College, a well-known institution.

VIRGINIA.—The educational institutions are essaying the feat of the fabled phoenix, and though prostrated by the war, are already commencing a new career of usefulness and grandeur. The ancient college of William and Mary, at Williamsburg, has determined to renew its regular sessions this fall. The University of Virginia, at Charlottesville, commences its regular courses on the 1st of October. Its work was not suspended during the war.

KANSAS.—The Hon. I. T. Goodnow, Superintendent of Public Instruction, has been unable to secure satisfactory returns from many of the county superintendents, in consequence of the disturbing influences of the war. The information received has, however, been carefully arranged in his annual report. The number of districts appears to be 823; out of 37,979 children between five and twenty-five years of age, 22,667 were last year enrolled in the schools; 205 male teachers were employed at an average salary of \$27 per month; female teachers, 527, average salary, \$16.60.

HOLLAND.—The education of the people is very well attended to. It is not compulsory, but every inducement is held out for parents to send their children to school. The teachers are well trained for their work, and well paid; the fees are low, and if parents are unable to pay at all, their children receive their education gratuitously; and parents, who will not send their children to school, are uniformly denied relief from the government funds. There is a normal school for the education of schoolmasters in almost every important town. Nearly every child in Holland, above ten years of age, is at least able to read and write.

BELGIUM.—Education is almost entirely under the direction of the priests. It is said to be better attended to than in France and Austria. The subjects taught, however, are the most elementary—a little reading, a lit

ting, and a very little arithmetic. Compulsory attendance at the schools is not compulsory. FRANCE.—In the Educational Sliding Scale, which Keith Johnson gives in his Atlas, France stands about midway, being at the top, and the poor old States and Russia being at the bottom. The national system of education was introduced by M. Guizot in 1807, and provides that every commune or parish shall have at least one elementary school. Attendance is not compulsory, but it is permitted to be employed in the

factories until it has reached the age of nine. Popular instruction is, however, very unequally distributed; for while in some departments it is almost complete, others are not half provided for. The eastern departments are the best educated—twenty years ago the proportion of those above twenty years of age unable to read, being only one in ten, and it is to be hoped that since then this one has taken to better ways. The departments of the center and west are in a far worse condition, the ratio of those unable to read being seven to ten.

CURRENT PUBLICATIONS.

HISTORIES of literature are of two kinds. One is scholarly, exhaustive, and critical, and is designed solely for the student who has dedicated himself to any branch of literature. The other is popular, and may again be divided into two classes: the first giving every detail of the works of the first giving every detail of criticism, together with their sources, and are storehouses of learning and information, of which Bähr and Bernhardt are the second, less learned, more biographical, more discursive; of which the first are Browne and Dunlop. These are characteristic of the respective schools of thought, which they represent, the German and the English.

The other kind of Histories of Literature are designed for the general reader, and these works are very aptly called "Compendiums" by Professor Cleveland. They are popular in form, and abound in extracts sufficient to give a general idea of the work of each author, and to store the mind of the reader with literary gems. If we review them we will find that the most of our knowledge is derived from compends, and that we have become necessary to general education and general information.

These compends collect, collate, and generalize in the department of literature, but the great utility they can do but little more than read the results of their labors, and these often in the succinct form. Of all these compends, however, none builds us up more rapidly in literary culture and historical knowledge than the compendiums of literature. They should ignore ignorance of a language be a barrier to a general knowledge of the sciences and literature of other nations. We are very well acquainted with the genius of Virgil, of Schiller, Goethe, and Jean Paul, but it is an acquaintance with the German language. There is no room here to discuss the question whether any literature can be profitably read through translations. We suggest, however, that our Bible is a translation, and that the Germans know of Shakespeare (thanks to the transla-

tion of Tieck and Schlegel) than do we. If there were no other reason, yet the standard of modern education is demanding wider and more general information. But what literature is more interesting for its genius, its originality, its freshness, its antiquity, than that of Greece and Rome. Here we have the first and best fruits of the mind of man; the model of modern literature, and the curriculum of modern education. To the translation of it almost every poet of note has devoted some of his energies. Surely there was a necessity for a "Compendium of Classical Literature," and there were abundant and most excellent materials. This need Professor Cleveland has fully met, and these materials he has faithfully used. It is not, nor does it pretend to be a critical work for the use of scholars; but it is what it purports to be, a popular treatise for the general reader, and all those who in the process of their education have not the time or the inclination to master the classics. With such a book within reach no one need be mortified through ignorance of the great names in the literature of antiquity; but in addition one may see "through a glass darkly" some of the beauty of ancient mind.

The works of Professor Loomis are all favorably known. Few of them, however, have stood the test of public opinion so well as his text-book of "Natural Philosophy." The peculiarity of this work is in ignoring the existence of a centripetal force. This innovation involves many tedious explanations in curvilinear motion, which are avoided by calling the attracting agencies "centripetal force," while students comprehend it quite as well. The language of the work is

(1) CLEVELAND'S COMPENDIUM OF CLASSICAL LITERATURE. New York, Philadelphia, and Chicago: Schermerhorn, Bancroft & Co. pp. 622. \$2.50.

(2) ELEMENTS OF NATURAL PHILOSOPHY, designed for Academies and High Schools. By ELIAS LOOMIS, LL.D., Professor of Natural Philosophy and Astronomy in Yale College, &c. New York: Harper & Brothers. 12mo. pp. 261. \$1.00.

so concise, that the teacher who uses it with advanced classes, might advise *verbatim* recitations from it.

No person is so well qualified to compile a text-book upon any given subject as the teacher who has instructed upon that subject by lectures for many years. What to give and what to omit are the difficulties besetting the compiler. Hence Dr. Draper's experience and good judgment insure an excellent text-book on chemistry.* This work is one of the finest elementary books extant. Indeed, so successful has he been as an instructor, that a book needs no higher commendation than to have him as its author. Berzelius, the father of chemistry, always mentioned him in terms of the highest respect, and regarded him as occupying a high position among the ablest investigators of the age. Dr. Draper's discoveries, some of which he modestly alludes to in his book, have been numerous, and so important that Runsen and Tomlinson, thinking him dead, have taken to discovering them over again. In this chemistry the topics are selected in a judicious manner, and are so discussed as to excite interest in the student. We know of no work so thoroughly deserving and so well adapted for use in schools as this of Dr. Draper.

Chemistry, not Physics, is the stronghold of Dr. Draper. He has, however, given us a good text-book on "Natural Philosophy." The arrangement is somewhat unique. He treats first of Pneumatics, believing it better to excite interest in the study before taking up the dry Mechanics. Astronomy is also briefly discussed in its physical bearings. This work shows the same anxious effort after accuracy and clearness, without regard to beauty of style, so characteristic of all Dr. Draper's works. The Natural Philosophy hardly equals the Chemistry in excellence, but is as good as the most of its rivals.

Text-books on scientific subjects multiply rapidly. Scarcely a month passes without yielding some new work. This, however, is natural. Discoveries succeed each other so quickly, that "to keep up with the times," new editions of standard works would need to be issued monthly. This is impossible, and hence the demand for new ones. Dr. Hooker, of Yale College, has attempted, we think successfully, to supply the demand. His "First Book in Chemistry,"* is excellent. We are somewhat opposed to the simplifica-

tion and "drawing out" of scientific subjects. But here, as in the case of Faraday, we must make a notable exception. The author adopts the method so successfully employed by that savan in his "Chemistry of a Candle," giving children pleasing explanations of every-day occurrences in such a manner as to arouse curiosity.

"The Child's Book of Nature"† is of the same character. Both in its plan and execution it is adapted to the instruction of children, and must prove a valuable assistant to parents and teachers. Indeed, children of a larger growth would profit by a perusal of the book. Higher in grade is the "Natural History."‡ We like this book; not because a text-book on Natural History is any thing new under the sun, for surely we have enough of such, but because the subject is treated in a manner so simple and familiar, yet dignified, as to render the road to knowledge almost royal. The book, in style, is unlike most others of its class, as they are generally written in a hard, concise style, fit only for a heavy, scientific report. We approve of the glossary, which, instead of defining the terms, refers to the page on which the definition is fully given and illustrated.

Dr. Hooker's series closes with "Science for the School and Family,"* in three parts—I. Natural Philosophy; II. Chemistry; and III. Geology. These books give such points as are essential to every well-informed man, and avoid technical discussions. The "Natural Philosophy" is not a better text-book than those which we have already noticed. It might serve as an excellent introduction to the books of Dr. Loomis or Dr. Draper. The "Chemistry" is quite a good book. The author evidently has not endeavored merely to make a book, and the work, therefore, is not encumbered with the trashy observations too common in such works. We doubt the advantage of the arrangement of topics. The student might profit more by learning the principles of chemical philosophy before studying the peculiarities of the elements. The atomic theory, with its three great laws, should be thoroughly understood before the pupil attempts any investigation of its effects. We regret also that a desire for novelty has betrayed Dr. Hooker into placing the discus-

Yale College. New York: Harper & Brothers. Small 4to. pp. 231. 90 cents.

(*) A TEXT-BOOK ON CHEMISTRY, for the use of Schools and Colleges. By JOHN WM. DRAPER, M. D., LL.D., Professor of Chemistry in the University of New York, &c. New York: Harper & Brothers. 12mo. pp. 452. \$1.00.

(†) A TEXT-BOOK ON NATURAL PHILOSOPHY, for the use of Schools and Colleges. Containing the most recent discoveries and facts compiled from the best authorities. By JOHN W. DRAPER. New York: Harper & Brothers. 12mo. pp. 381. \$1.00.

(‡) FIRST BOOK IN CHEMISTRY, for use in Schools and Families. By WORTHINGTON HOOKER, M. D., Professor in

(6) CHILD'S BOOK OF NATURE. Intended to aid Mothers and Teachers in training Children in the Observation of Nature. In three parts. I. Plants; II. Animals; III. Air, Water, &c. By PROFESSOR HOOKER. 4to. pp. 470. \$2.00.

(7) NATURAL HISTORY. For the use of Schools and Families. *Ibid.* 12mo. pp. 382. \$1.50.

(8) SCIENCE FOR THE SCHOOL AND FAMILY. *Ibid.* Part I. Natural Philosophy. Illustrated by 300 Engravings. 12mo. pp. 346. \$1.50.

Part II. Chemistry. Illustrated by numerous Engravings. 12mo. pp. 435. \$1.50.

Part III. Mineralogy and Geology. Illustrated by numerous Engravings. 12mo. pp. 360. \$1.50.

of the so-called "imponderables" at the close of his book. Part III., on Geology and Paleontology, is hardly equal to the others. It is not characterized by the same moderate and impartial judgment. We think it proper in any man, however well informed, to guard against the reputations of such men as Huxley, Smith, Lamarck, and Morton. It would be a pity if Darwin and Huxley be spoken of as infallible. True, the development theory is under discussion; and savants have not decided whether man is of one or many species; and for this very reason we maintain theories concerning these subjects should be treated with respect. For the competent teacher it will prove a text-book of great merit. On the whole, Dr. Hooker's works are accomplishing a great work, by drawing attention to the importance of sciences as a means of mental development. He is thoroughly in earnest, and devoted to profit the youth in America.

Emerson's "Logic of Algebra" results in the discovery that our present systems of mathematics are very "unsatisfactory and defective," and is an attempt to place them on a proper basis. The attempt is praiseworthy, but, considering the magnitude of the undertaking, and the liability of man to error, we think the author would have evinced better judgment, and rendered his work more acceptable to the reader, had he been less dogmatic and arrogant in his assertions.

He denounces logarithms, and promotes something better in his treatise upon arithmetic, for which we therefore wait with interest, as we too lack a love for logarithms. Mr. Emerson advances some new ideas of value, and altogether the work is of great value.

"Atlantic Monthly," for September, contains the following articles:—Coupons, I., by J. T. Trowbridge; Wilhelm's Apprenticeship, by D. A. Wasson; Garden, IX.; Scientific Farming, I. Hamilton; Dr. Johns, VIII., by Donald McNeill; Natural History of the Peacock, by W. Parsons; Up the St. John's River, by W. Higginson; A New Art Critic, by Benson; The Luck of Abel Stead, by the author of "Life in the Irons"; Sonnet, by T. B. Aldrich; The Captivity of Jeff. Davis; The Chimney Corner, by Mrs. H. B. Stowe; A Visit to the vortex, by Mrs. Farrar; On a Pair of Shoes, by Charles L. Sprague; Commemorative Ode, by J. R. Lowell; Our Military System; At Bay Ridge, Long Island; Dining at the Heads."

"Upper's Monthly Magazine," for September, contains the following interesting table of con-

tents:—September (poetry); a trip to Bodie Bluff and the Dead Sea of the West (concluded); Love in a Hospital (poetry); Miss Pink's First Season; Niagara in Spring (poetry); Sketches of Social Life in China; Tom Malloy's Revenge; Anesthesia; the Pond House; Milford; Armadale, by Wilkie Collins (continued); The Helmsman (poetry); Street Education; Margaret Bronson; Hannah Fanthorne's Sweetheart; Our Mutual Friend, by Charles Dickens (continued); Recollections of an Old Fogey. The "Editor's Easy Chair" is, as usual, quite interesting, and the "Drawer" will never be void of plenty of wit and humor.

"Trubner's American and Oriental Literary Record," is a valuable register of the most important works published in America, India, China, and the British provinces, with notes on the literature of other nations. The current number has an article on "American Literary and Scientific Intelligence," and enumerates the "American Works in Preparation," "American Periodical Literature," "New American Books," and "American Books on Military History and Science."

A little book, by the author of "Sunbeams and Shadows," has been published, and will prove almost as interesting to the young folks as that popular work has been. It is most suitable for girls, has a variety of incidents that will please the most undisciplined mind, and embraces some capital boarding-school scenes which will please any one.

To the series of German text-books, &c., recently noticed in the MONTHLY, has been added a little work, consisting of specimens of the most popular modern German Ballads, with biographical sketches, notes on the text, and introductions to those poems which are founded on history and legend.

The "Massachusetts Teacher," for August, has an article on a subject which teachers must regard with interest, and which has been discussed in the MONTHLY. The article is entitled "Pronouncing Orthography." It endeavors to provide a remedy for the irregularities of our orthography, and while avoiding the objections made to phonetic printing, to secure its essential advantages.

The "Maryland School Journal" is published regularly, with a degree of ability which should have wider scope. We trust that the recent educational movements will awaken an interest that will make an enlargement of the "Journal" expedient.

The "Illinois Teacher" has a Mathematical Department, conducted by Prof. S. H. White.

LOGIC OF ALGEBRA. An Essay on the Fundamental Principles of Algebra, for the purpose of placing that science upon a more correct basis. By SAMUEL EMMERSON. A. M. New York: W. I. Pooley & Co. 8vo. pp. 26 cents.

(10) SEA DRIFTS. By Mrs. GEORGE A. HOLMES McLEOD. New York: Carter & Brothers. 16mo. pp. 364.

(11) DEUTSCHES BALLADEN-BUCH, etc. Von PROFESSOR L. SIMONSON. Boston: De Vries, Ibbart & Co. 16mo. pp. 32.

SCIENCE AND THE ARTS.

—A meteoric stone fell recently in France, which, besides the usual inorganic constituents, contained six per cent. of a black amorphous organic substance—a kind of humus, which consisted of the organic elements, carbon, hydrogen, and oxygen, in proportions quite similar to those in which they occur in lignite and peat. M. Wohler reports other cases of a somewhat similar character, but none so conclusive as that just mentioned; and he infers that, wherever meteorites come from, organic matter, and hence probably organized matter—organisms in fact—must also have an existence. That the meteorites should contain volatile and decomposable substances, is not inconsistent with the fact of their incandescence, for this may have been produced suddenly, and affected their surface only, not penetrating to the interior of the mass.

—In speaking of the generally smaller cranial capacity in females and the closer approximation of the type of their skulls to those of the lower races, Dr. Vogt shows that the difference is greater according to the development of the race; so that, in this respect, the "male European excels much more the female than the negro the negress." Speaking of the discussions concerning man's relations to apes, he says that a wide gulf still exists between them, but he expects much for the future. "Twenty years ago fossil monkeys were unknown, now we have nearly a dozen; who can tell that we may not in a few years know fifty? A year ago

no intermediate form between *Semnopithecus* and *Micacus* was known; now we possess a whole skeleton; who can assert that in ten, twenty, or fifty years, we may not possess intermediate forms between man and the ape?"

—The English system of announcing storms by telegraph has been adopted in Prussia.

—Observations with an improved anemometer prove that the wind rarely blows in a perfectly horizontal direction. The deviations from that direction, although usually very small, are sometimes very remarkable, and follow each other in such a way, especially during strong breezes, as to indicate a species of undulatory motion in the wind.

—A mechanical contrivance, invented by Mr. S. Bourne, of London, preserves liquids from the injurious effects of the atmosphere in casks or other vessels. It is a "patent flexible diaphragm," or thin membrane, so placed as to divide the vessel into two separate chambers, the lower of which contains the liquid, while the upper one becomes filled with the air that enters as the fluid is drawn off. The membrane, fitted in with a water-tight joint, adapts itself to the form of the vessel, expands so as to allow it to be entirely filled, and rests on the surface of the liquid, while the latter sinks, and effectually protects it.

MISCELLANY.

—The application of soap as a detergent is not of high antiquity. Like many other useful things, it seems to have been known for a considerable time before it was turned to its most serviceable account. Soap at first was merely a cosmetic for smoothing the hair and brightening the complexion. When once its valuable cleansing powers were discovered—doubtless by accident—the employment spread rapidly. Numerous soap manufactories sprung up in Italy, notably in the little seaport town of Savona, near Genoa, whence the French name of soap, "savon." The manufacture soon spread into Spain and France. Marseilles became famous for its marbled soap. Our word "soap" probably comes from the Latin "sapo," which is mentioned by Pliny as an invention of the Gauls. It is generally believed that the difference

in spelling between the English and Latin names arose from the ignorance of some copyist in the Middle Ages.

—To talk of yourself without being vain, and to talk of others without slander, are two hard things for some people, too hard for others.

—The patriotic hymn "America" was written forty years ago, for a Sunday School celebration.

—Incredible as it may seem, many of the richest planters in Jamaica live on coffee grounds.

—The letter C is like a schoolmistress—it forms lasses into classes.

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THE LATEST WORD ON THE OCEANIC CURRENTS.

intimate relation of the writer of article to Dr. Petermann, the noted German geographer, has led him to prepare the following account of the oceanic currents, in the results are stated which are not those that have found their way into our geographical text-

the great oceanic currents with which geography has to deal, are the Arctic, and the Antarctic. The latter is the best known of all, but it devotes but little attention to it, merely stating that it has a tendency to flow along the equator round the globe, and so, running from east to west, it is deflected by the great bodies of land—cause—the greater rapidity of rotation of the earth from west to east, forcing the waters to drag behind, to form a current—is fully given in physical geography, and need not be said here. I would like to refer to, however, to Mr. Morgh's celebrated, "Man and Nature," published in 1851, for some singular, and, at the time, perfectly reasonable speculations regarding the future history of the Panama canal, should there be at some coming time a canal dug through the Isthmus of Panama—in case the waters of the great current should deepen and widen their passage, and at last form a direct road to allow the main body of the great current to pass unimpeded westward. There would, apparently, be no reason then for the Gulf

Stream to turn upon itself, and convey the warm waters back to the eastern hemisphere; its waters would follow their normal tendencies westward, and, in the end, strike upon the eastern coast of Asia. Not only would this lower the climate of Great Britain and Northern France to that of Labrador, but it would no less affect the whole character of the Pacific and the western coast of America. It would reshape the history of the globe. The places which are now the centers of civilization would be surrendered to a desolation greater than that which has befallen the mighty capitals of Persia, and Assyria, and Egypt; and places now hopelessly deserted by man would begin to be the thronged seats of life and culture. Such a culmination seems distant and most improbable; yet all great physicists admit its only too great probability.

The equatorial current may be traced in the Atlantic, the Pacific, and the Indian oceans. In the Atlantic, it divides into two parts after striking upon the American shore, the larger of which runs northward in a strong stream, which is very narrow and swift off the coast of Florida, but which opens gradually like a fan, and loses its speed. It has been common not to depict its course much beyond a more northern latitude than 45°, or that of Newfoundland, and then to dismiss it with some commonplace allusions to its influence on the climate of Iceland, Great Britain, and Norway. And writers like Maury, whose studies have been confined mainly to the generalizations to be drawn

from the courses of ships in the usual channels of trade, are to be excused, in a measure, for not being very familiar with its more northerly influences. But students, like Petermann, whose command of authorities is more extensive, have not failed to recognize a more extensive influence than that which is felt on the eastern shores of Europe. The thermometrical observations which have been made upon the northern side of Nova Zembla, where the average temperature is found to be 43° higher than in the corresponding latitude in Northern Greenland, fill one blank in our previous knowledge. The Corean Sea, south and east of Nova Zembla, and which is shut off from the influence of the Gulf Stream, is a frozen and almost impassable body of water; and the lands which touch it are bleak and savage compared with those on the northern side of Nova Zembla, where the influence of the warm current is felt. Nor does it cease there. Look further east to the great peninsula of Taimyr, which juts out from Siberia as far north as the southern shores of Spitzbergen. It is surrounded by an open sea, and has by no means a severe climate. Of Spitzbergen itself, many of our readers know that English yachts go thither every summer to hunt, and the old prejudice regarding its terrors has utterly disappeared. But go further east, as far as to the New Siberian isles, and even Cape Jaktan itself, and in the open sea and in the abundant flora and fauna you have the clear traces of the Gulf Stream.

The weaker arm, which turns southward along the eastern coast of South America, does not double Cape Horn, as some maps falsely indicate, but carries warmth as far southward as the Falkland Isles, and then strikes a strong current from the Antarctic pole, is deflected eastward, and soon ceases to exert a perceptible influence—so far, at least, as observers have yet studied.

The great equatorial currents of the Pacific and Indian oceans must be passed over. They may be found traced accurately in most of our late maps. The Pacific does not appear to have any well-marked returning stream south of the equator; north of it, however, it has the great Japan Stream, so called, whose waters return

past Eastern Asia, the Aleutian Isles, and Alaska, to the American coast, and make the circuit complete.

In the Indian Ocean, an equatorial current strikes the western coast and the Island of Madagascar; but instead of doubling the cape and continuing westward, it bends round sharply, and runs eastward as far as Australia. On the west side of this continental island, it divides into two parts, one of which turns north and joins the equatorial westward current, completing its circuit, while the other passes along the south side of Australia as far as Tasmania, and there forms a circular minor current, running first southeasterly as far as Macquerie Island, then northeasterly to New Zealand; and so round, in a half circle, again to Australia and Tasmania. New Zealand, it will be seen, is in the same latitude with the New Georgian isles, east of Patagonia; but the former possess a delightful climate, while the latter are the home of snow and ice.

From the poles there issue currents, whose natural course is toward the equator. The absence of large bodies of land in the southern hemisphere allows them to follow their natural direction, which the great continents at the north prevent. Near the south pole, there seems to be a general and direct radiation northward—the lines being at first parallel with the meridians of longitude. These begin, ere long, to be slightly deflected eastward, and at last, at about 40° , they run nearly on the parallels of latitude, and due east, forming a weak but very extensive complementary current to the general equatorial one, whose curve is just opposite. The lines of radiation are most faintly observed in the Pacific, and the resultant stream, compensatory to the great westward equatorial current, is scarcely observable enough to be designated on our maps.

These lines of radiation from the south pole carry ice a long way northward, as far into the Pacific and Atlantic as latitudes which correspond with those of Lisbon and Genoa in the northern hemisphere. West of the Cape of Good Hope, icebergs are found in great numbers as far north as Tristan de Cunha. They do not, however, strike the cape itself, being fended off by

east warm current of the Indian which, as I have already said, a sharp bend eastward here, instead of following the cape. There is, however, a continuation of the cold polar waters up the western side of Africa, whose salutary effects are felt as far north as the Bay of Biscay. This may be relied on, notwithstanding the statement of some authors that the current is a warm and old one.

The same phenomenon is observable also on the western coast of South America. The separating lines of water from the Antilles strike against Cape Horn, and are carried westward. A portion of them gather, and a current which is strong enough to deflect eastward the warm current which has already been alluded to as flowing down the east coast. Another portion, indeed, but perfectly traceless northward along the western coast analogous to the one just referred to on the West African coast. This was as early as the Spanish invasion of the officers immersed their arms to cool them.

In the northern hemisphere, I must take the perfectly defined cold current sets down the eastern coast of North America, and which probably conveys the warm waters of the Gulf Stream. The rest of it continues its southward

course, joined by another strong, cold current, which sweeps down Baffin's Bay. Somewhat singularly, a part of the current of East Greenland doubles Cape Farewell, and eddies northward, leaving drift-wood brought from the Siberian rivers as far north as Disco. The great polar current does not cease its influences at the latitude of Newfoundland, but follows the Atlantic coast of the whole United States. If the climate of England is raised by the Gulf Stream beyond the natural thermometric average which it would owe to the sun's heat, that of New England is depressed proportionably below it by the cold current from Greenland.

Another similar stream, but one far less important, sets down Behring's Strait, but it can not be traced beyond the Aleutian Isles. Its influence on the northern side of Alaska is so great, however, that walrus are found at a point hundreds of miles further south of a place where, on the southern side, humming-birds are seen. The latter side is exposed to the influence of the Japan Stream, the Gulf Stream of the Pacific.

Such is a brief *résumé* of the chief currents of the globe. I need not say that it would be easy to expand the subject further. It is trusted that the teacher can, with the aid of a polar map, succeed in following the lines indicated.

MOTION.

Since it was suspected that there are in creation three separate states, or modes of existence—namely, *matter*, and *spirit*—and that the various speeds or velocities of motion give rise to light, electricity, etc., it has been deemed of some interest to inquire if it could not be advantageously substituted as a “motor” in the place of steam; and words, whether electricity may be more powerful and more generally applicable than heat. We, as yet, know little of electricity, its forms of existence, or its capabilities. We have, in-

deed, discovered that all the various forms of motion can be converted into each other; that heat, for instance, can be transformed into motion, and motion into heat, by the least friction; so motion develops electricity by the electrifying machine. Then why not electricity produce motion? By a certain degree of motion we have simply heat; increase it, and we obtain light; a higher or more refined motion gives electricity;—and as matter can not be annihilated by matter, or motion, or any thing, save the power that created it, so *motion once created ever exists*, and can never be

annihilated except by that Omnipotence that called it into being. Like matter, it may be transformed, changed in appearance, or in its effects, yet it never is destroyed; it may become latent, for we speak of latent heat as a common thing. And may there not be latent light, latent electricity, latent motion? The rays of the mighty mysterious sun come to this globe as motion; vegetation drinks it in, and stores it up, as it were, in its woody fibre, and in its varied productions, which may be set free again in burning; or it may be buried with the wood in the earth, converted there into coal, and after a lapse of ages brought to the surface of the earth again, and by use in our steam-engines be once more converted into motion for thousands of spindles, or for the transportation of men and things in countless numbers and endless variety. Part of it leaks out as heat wherever there is friction; and part is diffused in the atmosphere, giving rise to motion in the currents of the air, until lost in the multifarious winds of heaven. Yet not the smallest quantity of motion is lost or finally destroyed. That heat, light, electricity, and perhaps life, are but motion of some kind or other, seems now nearly evident; they certainly are not *forms* of matter, and it accords more with the divine simplicity of creation to consider all these agents—which, to express their peculiarities, we have called imponderable agents—as but one, acting in different ways or degrees, than to assume the existence of many agents to account for the special phenomena they present.

For several years past philosophers have shown both rectilinear and circular motion by means of electricity, but their apparatus have been mere toys, of no practical application whatever. Ingenious men have, however, endeavored to produce a machine working alternately by the attraction of the electro-magnet and gravitation, but, as yet, all such engines have proved to be too weak for the least useful purpose; still, in spite of all these failures, no one despairs of its being successfully accomplished some day or other. Why should it not? We have not surely attained the highest point of human skill and discovery, and there is no good reason why electricity may not

prove a valuable agent for machinery. For upwards of two thousand years electricity was known, as an agent or fluid, to attract and repel, without unfolding any knowledge worth calling science; and although much has been learned of it within the present century, yet much, very much, remains unknown;—it may take years to bring it to practical use in all the modes of which it is susceptible. The only motion we have yet obtained from it, of a valuable kind, is the magnetic telegraph, which gives a weak but wonderfully rapid motion; so that so far electricity seems only adapted to swiftness, not lifting; yet it by no means follows that it never can be used otherwise. We must continue to try, to experiment, for it is a power that would be free from many sources of accident that are incidental to steam, besides being cleaner in its development, and more powerful in itself when properly applied.

The methods heretofore adopted of obtaining motion from electricity have been mainly by converting soft iron into a magnet, or by generating various magnetic currents; but these are obviously not the proper ones to convert electricity into motion for mechanical purposes. An entirely new path of inquiry must be attempted. By the *decomposing* power of electricity we might effect the instantaneous conversion of a liquid into a gas, whose elasticity would raise a piston, and, by cutting off the electric current, return instantly to its liquid state, which is the principle so well adapted to convert heat into motion. Two cylinders thus working alternately would keep up a motion that could be either rectilinear or curvilinear, and thus satisfy the mechanical want. Experiments have been in progress to this end, with some success, and it is hoped a sufficient power will soon be obtained in this way to test the question of the availability of electricity as a mechanical force. At present this mode of generating motion is too expensive, but we must not expect perfection in the start. The earth and the air are both abundant reservoirs of electricity, and all who have the necessary apparatus should aid in this work, by experimenting with various fluids or liquids; the right plan once discovered, machinery to put it into practical use can

er be invented. This mode of progress; motion will form the subject of future papers, as new points arise, may have the effect of setting men to

thinking; and thought, it must be remembered, produces action, and action discovery, and discovery adds to universal advantage and happiness.

GERMAN EDUCATION IN AMERICA.

The management of German academies, institutes, or free schools, is a subject to the growth of the German element amidst gives especial interest.

Among the objects of study in German series, and in which proficiency is desirable, are, first, an equally thorough knowledge of the German and English languages and literature; second, grammar, pure and applied, together with a few of the most important elements of natural philosophy.

There can be no imitation whatever of the American school system, as between the two no analogy exists; for with this method and system of inculcation can be effected at by common-sense means, because they have but one language, one method; whereas, the double difficulty for Germans is that of arriving at some logical course of tuition, by which children may compare as favorably, and, in their attainment of written and spoken English, as those of American schools, with the advantage of an equal facility in the mother tongue.

Therefore, to carry out this scheme, it is necessary, in the first place, that the foreign native elements should be taught by teachers only who are versed in the use of languages, philologically and practically.

A German tutor, thus trained, can give sound instruction to his class; he is well fitted for explaining, according to the studies of his scholars, the construction of a German or English sentence; he can, of course, more lucidly demonstrate the agreement of the adjective with the noun in gender, number, and case; the pronoun with its nominative case, or sub-nominative and person; and that prepositions, which are the signs of different relations according to their nature and import,

must have the nouns before which they stand in the same case as the prepositions indicate, etc.; then he can point out, either by an English translation, or by some passage selected for the occasion, the similarity or difference in analysis, construction, and arrangement. This system of mental gymnastics, repeated with variations until proficiency be attained, will tend to develop the powers of the mind as physical gymnastics will the muscles of the body.

Again, the class, during the German reading lesson, should be made to write down, as a nomenclature, every remarkable word, with its English translation, as well as every English one, during the English reading lesson, with its German translation. At a convenient season, these words thus treasured in the nomenclature should be spelled aloud, and afterward employed in the construction of English and German sentences, *vice versa* and written.

Translations from either language should not be given as a home-lesson until a certain proficiency is attained, but should be conducted in the presence of the tutor—construed in class—so that others may have the opportunity and benefit of correcting and improving; which accomplished, they should then be legibly written on the blackboard, and copied by the whole class. The lesson should then be retranslated into the original.

It would also be advisable in those classes where Latin and French form a part of the upper studies, to treat upon the derivation of English words—their Saxon, Norman, and Latin origin, with as much as possible of the historical character of the Latin, Saxon, Teutonic, and Norman races; but this, again, it is clear, can be with justice performed only by those who have had a philological and literary training.

Here we would censure what appears to

us a dangerous policy, namely, that of abolishing the study of the Latin tongue in favor of French, when such scholars as Professor Max Müller advocate it as the right material for training the mind of youth, and for forming the foundation whereupon to build the stately fabric of scholarship. It appears to us quite as reasonable to recommend the study of trigonometry and conic sections in preference to the useless study of Euclid. However, we do not wish to be understood as recommending Latin in every class, but only with those which have been hitherto considered sufficiently advanced for the study of French. We believe it may be truthfully stated that the wholesale blunders usually made in construing and analysis arise chiefly from the want of a knowledge of Latin and Latin grammar; the study of which, from its admirable construction, is highly calculated to facilitate the labors of the pupil in the earnest study of modern languages. But we have reason to suppose that those who would abolish Latin from the upper classes of German institutes and academies, would equally favor the abolition of construing, analysis, or parsing, as totally unnecessary in learning a modern language. We presume they would say: Teach our children to speak French, so that monsieur can readily understand them, and we are satisfied; or, in other words, cram them with dialogues, words, and sentences, so that we shall have the unspeakable delight of hearing them gurgle fluently in a modern tongue. Now, we would seriously ask, is this education? Another very

prevalent fallacy is, that Frenchmen only are capable of teaching French. If the antecedents of every professor of French throughout the United States could be obtained, we believe that fully one-half or more would be found to have filled originally the position of laquais, valet-de-chambres, commis, or garçons d'hôtels, etc. This, however, would not prevent us from giving them their full meed of praise for their success in life, if their knowledge had increased with their aspirations; but, as a rule, if these gentlemen do speak or write correctly, it proceeds, not from their grammatical or literary knowledge, but in spite of it. We seriously ask, how can such men, to whom comparative grammar and the science of language are unknown, be educators—imparters of knowledge?

It is the advice of Professor Max Müller, in his review of the public schools of England, that English graduates only should be employed in teaching French grammar and composition, and that the reading and dictation lessons should be intrusted to natives of France. We are of opinion that a similar course would be the correct one in this country, and would be beneficial in both German and American seminaries.

Uniformity of discipline, as well as some recognized system of class-instruction, suitable to German-American schools, should also be taken into consideration.

In future numbers we propose to illustrate our method of class-instruction in English, German, and French, as well as what we conceive to be the most rational system of teaching mathematics.

THE GREAT PUBLIC SCHOOLS OF ENGLAND.

WE have read such varied accounts of the great schools of England, that we have not avoided varied opinions of those "time-honored institutions." Of late, however, the mists which partiality and prejudice have gathered about them have been cleared away, and we need no longer view them "through a glass darkly."

Upon this subject, the philosopher of

Harpers' "Easy-chair" expresses himself so happily, that we know our readers will pardon us for reproducing his views.

The great public schools of England are romantic objects to our imaginations. We are in the habit of viewing them through the tender light of Gray's ode upon a distant prospect of Eton. We think of them as ancestral halls of learning, venerable in themselves and hallowed by tradition. The

ivines that tapestry their gray walls, precious quadrangles, the studious silence of the buildings, broken by the merry laughter of the play-ground, the indefinable charm of literary association, of which Thackeray's description of Charter-house, in the "Newcomes," and his exquisite illustrations—all these elements, actual and imaginative, combine to give the great schools of England with a new interest, and to recall, when we think of them, the poet's words:

Like a monk, I like a cowl,
Like a prophet of the soul:
And on my heart monastic aisles
Fall like sweet strains or pensive smiles."

All this interest is confirmed and deepened by the impression, which is quite natural among Americans, that the youth who study at those schools emerge from their reverend shades amply accomplished persons.

It is a disagreeable awaking from an idle dream to learn that we are mis-

There are hints in "Tom Brown's Days," and in Thackeray also, which create a suspicion that all at those schools is quite as the imagination paints and common opinion accepts. But how they really achieve, how barren of definite results, how amusingly antiquated in theory and practice they are, few Americans understand until they read either the original report of the parliamentary commission upon Eton and eight of the great schools of England, or the digest of the report contained in a lively pamphlet by W. P. Atkinson,* whose profession of teacher, and whose wide and various acquaintance with all the literature of his time, peculiarly fit him for the task of commenting upon the report, which he does with great point and felicity.

A commission was appointed in 1861, consisting of six competent gentlemen, who held a hundred and twenty-seven sittings, examined very fully a hundred thirty witnesses, personally visited all the schools, instituted the most searching inquiries in every department of the scho-

lastic management, the history, revenues, and details of management, and reported in 1864, in four folio volumes, containing two thousand pages in double columns of fine print. Here, certainly, is copious material for an inquiry into the actual value of these schools.

Mr. Atkinson begins by asking what ought to be the education of three thousand of the sons of the higher classes of England, in her old and richly endowed institutions, and in reply supposes what it is. The youth will find in them, of course, noble libraries and the most admirable apparatus; he will be taught to understand the physical phenomena and the natural history of his country: the future citizen of a great industrial nation, possibly heir to a vast landed estate, and probably a legislator for all these interests, he will be instructed in all departments of science which bear upon these subjects, and will help him to govern and guide them. As one of the governing class of a commercial island, he will be well grounded in history and politics, in political economy, and in physical and political geography. As an Englishman, he will be taught to speak and write his noble native tongue with accuracy and ease, and to become familiar with the great authors who have illustrated and enriched it. Living near the Continent, he will acquire some of the neighboring languages; and will naturally be accomplished in music or drawing, or at least have some acquaintance with their history and achievements.

This is not an unfair statement of what may justly be expected in a liberal course of education for a young English gentleman at an enormously endowed English school. After a careful study of the long report of the commission, Mr. Atkinson gives us the astounding conclusion, which he justifies by details of testimony from the various teachers in the schools, that "in the great schools of England, in the middle of the nineteenth century, the whole of modern physical science—the whole study of the outward world—is, I do not say, pursued imperfectly—it is not pursued at all: it is absolutely ignored as an essential part of education; and a head master of twenty-seven years' standing can be found who

Saver and Francis, Cambridge, Mass.

says he thinks as a training of the mind it is worthless—it gives no power!”

“What *do* the schools teach?” the reader asks in amazement. Latin, Greek, and, subordinate to these, mathematics. Of the thirty-five masters at Eton, twenty-four are classical, and eight are mathematical; while *three* teach all the modern languages, physical science, natural history, English language and literature, and drawing and music; and this is the proportion in all except Rugby, which is more civilized. Mr. Atkinson does not quarrel with classical study. He is a scholar, and he knows its value. But for that reason he values it justly. It is “the preposterous abuse of classical study and the absurd neglect of science” which seems to him so appalling. The end of education, as he says, being a true and symmetrical mental development, the means must be more various and powerful than the grammar of two dead languages.

But at least, it will be urged, what they do teach they teach thoroughly. Let the Dean of Christ Church College, Oxford, which receives, with University College, the majority of Eton boys, answer. “Some fifty or sixty young men matriculate at Christ Church in the course of each year. Of these, perhaps ten will read for honors in classics. Such men would be able to construe, with tolerable correctness, a new passage from any Greek and Latin author, translate a piece of easy English prose into tolerable Latin, and answer correctly simple grammatical and etymological questions in Latin and Greek. *The other forty or fifty would not.*” These last can scarcely construe properly the authors they profess to have read. They are examined in the first four books of the *Æneid*, and the same of the *Iliad*. They are not examined at matriculation in ancient or modern history or geography. They are tested in arithmetic, but not in algebra.

There is, probably, hardly a boy who has been examined this summer for admission to any of our colleges who is not better fitted than the great majority of those who come up every year from the great English schools to enter the universities. Of study at the university, Mr. Atkinson does not treat at length. But it is interest-

ing to compare Gibbon's account of Oxford a century ago with the two papers upon the same university by Professor Goldwin Smith, lately published in “*Harpers*.” Mr. Atkinson says, trenchantly: “Oxford and Cambridge are little more than cockpits on a larger scale, and for older combatants to engage in contests of the same kind as those at the schools.” And he then naturally asks, “Whence come the real scholars of England?”

This question he answers by saying that the really fine scholars in England are fewer than we suppose; and that the English aristocracy, as a body, are not well educated. The best scholars in that country he believes to be self-educated or privately trained. The ignorance of many of those supposed to be of the scholarly class and the narrowness of university training, he illustrates by the gross ignorance of statesmen like Lord Derby and Mr. Gladstone in regard to our war.

Meanwhile, England herself is moving toward reform. The old institutions are so intensely aristocratic that new schools for the “middle class” are already established, where the experiment of a modern education is tried, and with success. Such are Marlborough, Wellington, and Cheltenham colleges, and the City of London school. Mr. Atkinson's idea of a true reform is, that it must found a course of liberal education, represented by a more thorough study than at present of the *Latin* language and literature, as the foundation of a study of language and general grammar, and of a knowledge of the kindred modern tongues, but in which the study of Greek shall be *wholly* superseded by a real study of the mother tongue and their languages, and in which the study of physical science shall be begun with the earliest development of the observing faculties. Not the least interesting part of his pamphlet is the testimony of eminent scientific men in England—such as Sir Charles Lyell, Professor Faraday, Professor Owen, Dr. Hooker, and Sir J. F. W. Herschell—to the insufficiency of the present system.

From these fragmentary hints the great interest and value of Mr. Atkinson's little work may be conjectured. It is notable,

also, as an illustration of the present tendency of the American mind to emancipate itself wholly from its old superstitions in

regard to England—an emancipation which will inevitably result in a more intelligent and cordial friendship.

AUTUMNAL BOTANY.

I HAVE just returned from an excursion in the country, a few miles beyond the city limits. I went thither from the turmoil of the city to seek refreshment for body and soul in the pure breezes and holy influences of Nature. I directed my steps, as usual on such excursions, into the deepest, wildest woods, as far as possible from the abodes of men, and from the haunts of browsing beasts. At length I found myself in the midst of thickets blooming with wild autumnal flowers in great profusion. All the enthusiasm of the poet, artist, botanist—whatever I possessed—was at once aroused. Ye flowers that adorned the haunts of my childhood! flowers that I had puzzled over in the botanic studies of my schoolboy days, and whose names I had settled according to the oracles of Linnaeus in the *Florula* of Bigelow! sweet, smiling, beautiful things, how they transported me back to the days of halcyon memories! how completely they softened the crabbed austerities of a careworn, worldly heart!

There, most attractive of all, were the Asters, an innumerable host, whose many forms often confound the keenest scrutiny of science;—the smooth blue Aster (*A. laevis*); fairest of all, the white-flowered Asters (*A. multiflorus*, *A. cricoides*, etc.); the broad-leaved Asters (*A. cordifolius*, *corymbosus*, etc.). Then the Goldenrods (*solidago*), always golden in color, of endless numbers and sorts also;—a tuft of light-green, lance-shaped leaves at the surface of the ground, spreading like rays; in the center, a slender stem rising one or several feet, clothed with scattered leaves, which, as in the Asters, become smaller and smaller upward. Branches grow out near the top, as if a little tree, bearing a mass of golden inflorescence, consisting of little tassel-form compound flowers; each flower being, in fact, not *one*, but about

thirty flowers bound together, in a definite order, into a sort of nosegay.

What wonders of infinite skill and power are displayed in this little neglected autumn plant! for the plant may ordinarily bear some five hundred of these compound flowers, or heads of flowers, while each head consists of about thirty true flowers; and each or any one of these fifteen thousand flowers, being submitted to the microscope, appears a paragon of perfection, a little gem of beauty—having its two styles in the center encircled by five curious stamens, with their many globes of pollen skillfully carved and wrought; then a corolla of two forms surrounding the stamens as a cup; then a calyx consisting of white shining bristles, and all mounted on a seed-like germ of exquisite workmanship.

And it is not enough that these plants are thus complex and complete in their structure, but they are also varied in *species* to an extent which affords an inexhaustible source of interest to the scientific inquirer. But Asters and Goldenrods, although so immensely multiplied and multifarious, are but a small part of the autumnal flora. Sunflowers (*helianthus*), in more than twenty different kinds; Dropflowers (*nabalus*), of a dozen sorts; Coriopeses, Rudbickias, and Girardias now blaze and bedeck the hedges and copses everywhere—plants, any one of which has attributes capable of awakening a chord of harmony, a gleam of sunshine, in the human soul, if only observed in the light of science and in reference to its great Designer. As I viewed these objects of interest, a sense of waste or loss stole over me, reflecting how few, how very few, have learned to know and to love these autumnal flowers.

For, in the first place, the science of Botany, although relating to the most interesting and important department in the natural world, is very generally excluded

from the public schools, and from other schools where *young men* only are taught, and assigned only to female seminaries and institutes, as though it were a mere accomplishment! The science of plants, trees, of vegetable life and growth, clothing and crowning the whole earth with riches and beauty—the knowledge of this science a mere feminine accomplishment! The prevalence of this notion can be attributed only to prevailing ignorance of the nature of the study—that is, ignorance of the science itself. Regarding it as treating of the form and color of flowers, counting stamens, etc., it might well come to this disrepute; but considered as revealing the laws of plant-structure, organization, life, and growth, and as reducing the vast system of vegetable life to one original *unique idea*, susceptible of being grasped by the human mind, Botany becomes not merely an accomplishment, but a *discipline*, adapted to the development of the noblest manliest powers of the soul.

Then, secondly, in the few and select schools where Botany is permitted as a study, it is assigned to the course of the spring and early summer only, and concluded usually in July. The teacher conducts his class through an investigation of those floras represented in his vicinity, and at midsummer their botanical pursuits are concluded for the season. Hence the beautiful plants which bloom only in the autumn, and the few lingering relics which open at last in winter, are neglected, and comparatively unknown. It is true that the learner is enjoined, in the closing addresses of the teacher, to persevere in his or her investigations unaided and alone, and to complete, as an amateur, what he had begun as a pupil, viz., the entire botanical circuit of the year. And there are some who, having been duly instructed, and made independent of teachers, *do* thus persevere, and reap a rich reward. These, however, are too few, where such an abundant feast is spread for all.

CORPORAL PUNISHMENT IN SCHOOLS.

THERE are works of fiction which are valuable addenda to the more ponderous labors of the historian. Such, certainly, are many of Sir Walter Scott's romances. The ever-changing scenes of national life which are pictured in the pages of Robertson and Hume, are illustrated and embellished by the finished figures and home scenes which adorn the tales of "Old Mortality" and "Ivanhoe." In like manner, but without presuming to hope for a like success, the writer of this article proposes to submit an old teacher's opinion on the subject of corporal punishment, which has already in this periodical been so ably, historically, and legally examined by previous contributors in the papers entitled "Pedagogic Life" and "Pedagogical Law."

The glorious uncertainty of the aforesaid law might also be pleaded in justification of this article, for while the use of the ferule is permitted by the highest legal authorities of Vermont and Massachusetts,

the coequal authority of Indiana with a wisdom surpassing that of Solomon's (if its conclusions are correct) asserts, and ex-Senator Dix, of New York, defends, the contrary opinion. Under these circumstances, well may the bewildered schoolmaster, or pedagogue as he is termed in the papers before us, exclaim with the ill-fated Desdemona,

"I do perceive here a divided duty;"

or, if irascible, as unfortunately some schoolmasters are, would he not be almost justified (on beholding, instead of a stable law, this Babel of conflicting opinions), were he to consign such uncertain sounds to oblivion, and do his duty according to his conscience, regardless of whatever unjust penalties might be imposed on him for so doing?

Therefore, with all due deference to the Supreme Court of Indiana, it is the purpose of the writer to contend for the right of all principals of schools to inflict reason-

punishment upon the children committed to their care; and to indicate the reasons for which, and the manner, the time, and the place in which such penalty should be inflicted. But before proceeding to the direct elucidation of the argument it is right to say that this paper is written in defense of all schoolmasters, public as well as private. It is assumed that it is the intent, even of the State of Indiana, that all her children should be educated, and certainly those who lack proper training at home are most in need of her especial care. The children of gamblers, swearers, and drunkards, are by no means any such in Indiana, are obtaining no kind of education before they enter the doors of the school-house; but it is an error, and must be eradicated. Before we can hope for a good crop you must first weed the weeds from your garden. It is true, alas! too often, necessary to punish the child of the parent in the child. But instead of withholding from the teacher the power to exercise this necessary right, the experience of many years proves, to the satisfaction of the writer, that the sway of the teacher ought rather to be extended, enabling him to reach thoughtless or disobedient parents with a ferule of double strength. But this is a hopeless wish, for in the present condition of the country it unfortunately proves that the law, notwithstanding its multifarious ramifications, is unable to prevent the extension of crime of all kinds as it is to point out clearly and accurately the path of duty to the schoolmaster. We now proceed to the elucidation of the subject in the order previously mentioned, commencing with

REASONS FOR WHICH CORPORAL PUNISHMENT SHOULD BE INFLICTED.

Rebellion or confirmed disobedience. A school can be rightly conducted in the absence of the authority of the principal is not possible. If the orders are incorrect, the child is amenable to the local powers of the law. "Will you study this lesson?" "I will not." There is no conquering this obduracy but by compulsory subjection. Repeated lying, repeated thieving, repeated swearing, and repeated gambling, long and careful admonition for prevarications, demand the same treatment.

These are acquired vices, sometimes learned by the child at its home, but there is no other effective remedy. The good teacher has duties to perform to the other children in the school as well as the delinquents, and for their sakes punishment is rendered necessary. Adult thieves are not punished by the law for a national amusement, but to protect the innocent, and deter the unwary from committing the same crimes. These reasons hold good in the school.

8d. *Per contra.* Let the schoolmaster never forget, before resorting to any punishment, the advice in the play above quoted:

"That his probation bear no hinge nor loop
To hang a doubt on. Or, we upon his life!"

It is impossible to overrate the evil effect of one unjust corporal infliction; it is very frequently remembered for life, and often cultivates for years in the recipient the worst of human passions. It is a wise maxim in our courts of law to give the prisoner the benefit of every doubt. It should never be forgotten in our schools.

THE MANNER IN WHICH CORPORAL PUNISHMENT SHOULD BE ADMINISTERED.

1st. The very first requisite of a schoolmaster is the perfect control of his own feelings and passions. It is the foundation of good government. Punishment inflicted in anger is an absolute crime of the highest magnitude on the part of the teacher. From such infliction no good result can be expected; it is productive only of evil on both sides. The classics, the mathematics, and the arts can be and often are imparted to youth by delegate authority; but the power of government and the strictest self-command are absolute requisites on the part of all principals of schools.

2d. As a rule, no child after receiving chastisement should be permitted to leave the presence of the schoolmaster until it is assured of his constant affection. This doubles the good effect, and should be a consequent of all punishment. On the part of the teacher this sympathy must be genuine, for almost all children can instantly detect that which is simulated. Affection is God's coin, if it be frankly given. It must and ever will be returned by youth in the same holy currency.

THE WAY IN WHICH CORPORAL PUNISHMENT SHOULD BE INFLICTED.

1st. Firmly. A slight punishment is not only useless but positively injurious. It is an advantage gained by the child. A judicious teacher is very seldom compelled to use the assistance of the ferule. No punishment should be so frequently resorted to as to render it common.

2d. Probably the method of punishing on the hand is the best that can be applied, for two reasons: firstly, because it inflicts sharp pain; and secondly, because it leaves no disfigurement. A jury of mothers will never agree upon the right spot on which to whip their children. Their feelings in this matter may be compared to those of the soldier who was undergoing the penalty of a military flogging from the hands of a friend. At first he said, Higher! higher! then, Lower! lower! until his friend, whose patience was exhausted, exclaimed: "Confound you, Sam, there's no pleasing you!" It will ever be the same with parents.

THE PLACE IN WHICH CORPORAL PUNISHMENT SHOULD BE ADMINISTERED.

1st. Always in private. A teacher has no right to degrade other children by a public exhibition of necessary brutality, unless they have been minor participants

in the same crime. Even then it is very doubtful if it be politic. The skeleton at the feasts of the Egyptians was only the more revolting because it was hidden by a veil. The same effect is produced by private punishment. A wise parent would not let his child behold the cruel flogging even of a brute. The hardening process of such an exhibition upon either children or men is very pernicious. It deadens the conscience, stimulates the cruelty, and brutifies the mind of the beholder. Nothing should be exhibited to either man or child which tends to lower the sacred value of humanity. For these reasons public flogging may be said to create rather than suppress crime.

In conclusion, the writer trusts that the reading public will weigh these statements, and not lightly sentence him as an advocate for unnecessary cruelty. A long experience in the field of education has given him a right to speak on a subject in the study of which he has passed thirty of the best years of his existence. He is quite willing to admit that in a small private school, in which the pupils have for some time remained under the charge of a careful instructor, corporal punishment may be superseded by expulsion. But this paper is written for all classes of schools, more especially for the public schools of the States.

THE STORY OF PETER PEDAGOGUS.

A SWISS SCHOOLMASTER OF THE OLDEN STYLE.

CHAPTER III.

A PRIMITIVE NORMAL SCHOOL IN SWITZERLAND.

THERE were, in all, about twenty in the class; some of them schoolmasters who had appointments, and others who wanted to get them. In the evenings, a few went home; the others boarded, like myself, here and there in the town. I had made the acquaintance of one of my class-fellows, to whom I disclosed the state of my finances, and my prospects generally. He advised me to offer to do some weaving for my landlord, as part payment, out of school-hours; the latter having no objec-

tions to this arrangement, I was released from all embarrassments of a pecuniary nature.

Our subjects of study were reading, writing, grammar, combined with construing, composition, arithmetic, and singing. Of elocution nothing was said, our attention in reading being merely called to the stops, at which we had to drop the voice, more or less. To read fluently was a matter of difficulty for most of us, but, by the time of our examination, we had mastered that. Grammar was taught by dictation, and those who could not follow, copied from the *cahiers* of the others—at

least those who could read written matter. I do not recollect what these exercises consisted of, for I never after consulted my note-books, and can not refer to them now. The parts of speech were alluded to—the words, if I mistake not, being divided into twenty-four classes. The cases of the nouns and the tenses of the verbs were touched upon; but what further I can not now call to mind.

Construing, however, was the grand point with me. In this, we operated upon the text of the Bible stories. The teacher first called our attention to the fact that between one full stop and another there must be at least one verb, which indicated the time and manner of the incident, state, or act referred to. A sentence was then read, and we were required to find the verb; or, if more than one, that which governed the others. We often guessed through all the words before we found the right one. When this was ascertained, we had to answer *who? whose? whom? to whom? by whom? when? what? which?* and so on. After all the words had been questioned off in this way, the sentence was done with.

Generally attention was called to the nouns, which we learned to know by the capital letters. But of the other words little notice was taken. The great mystery, construing, turned out to be nothing more than parsing, with special reference to the nouns and verbs. No proper definition of the parts of speech was given us; indeed, I am not sure that our teacher had any very definite notions on the subject. At one of the preparatory examinations, the school commissary asked us what the word *Palastine* was. Instead of saying it was a proper noun, one of us, prompted by the teacher, said "*the capital of Judea,*" whereupon the examiner looked as if he thought we were too clever by half.

At writing from dictation, we were all alike slow. First, we had some difficulty in catching the words as pronounced. Next, there was a doubt about the letters, and then how the words were spelled, so that we had no time to think of their meaning. The stops were read to us, so we had no great difficulty with them. When we had finished, the teacher gave

the book to one of us to spell aloud each word, so that the mistakes made might be corrected. None of us, however, were able to keep up with the speller, and usually half of the mistakes remained. We exchanged slates with each other, in the belief that we could detect the faults of our neighbors better than our own; but this was of very little benefit. Usually the speller pronounced half a dozen letters, while we, in our awkwardness, were occupied in correcting one; and I thought, at the time, that to write and to listen at once was a kind of wizard's work, which no honest Christian could reasonably be expected to do.

We got over our arithmetic with wonderful expedition. All manner of sums were wrought out in an amazingly short time; the four fundamental rules, both with and without fractions, were dispatched in a twinkling; cubic measurement was confined to the dimensions of hay-stacks; the Rule of Three, Fellowship, and Interest were summarily disposed of; we even closely approached the square-root and chain-rule. The way we managed to get on so rapidly was this: the teacher cried out, "*Attend!*" wrote an example of a rule on the blackboard, and told us to copy it into our exercise-books, so as not to forget it. One or two of the pupils then wrote on the board one or two other examples of the same rule, those having a good memory copying stroke for stroke what they had seen done before, and we were finished.

Much time was taken up with catechising—the agony of the prospective school-masters, and the delight of the established ones. This consisted in answering from memory the questions in the catechism, which, being regarded as a synopsis of the doctrines of Christianity, was deemed sufficient to enable us to pass our examination in theology. Nothing was explained to us, nor were we told any thing about the differences between the Roman Catholic and Reformed Churches, of which it might have been useful to us, as teachers, to have known something. We repeated the answers in the catechism much as bullfinches pipe words and sounds which they do not understand.

When we had been catechised almost to

our wits' end, we proceeded to singing, and from singing psalms to "figural," that is, to singing from written music. We were taught the meaning of the marks denoting flats and sharps, and were told how to divide the notes into halves, quarters, and eighths, how to keep time, and how to distinguish the bars. Then we sang till windows clattered, and the crickets in the oven began to dance. Thus we usually closed our day's lessons.

It will be observed by the discerning reader that we really learned very little; and, if the manner we were taught this little be taken into account, it is surprising that we learned any thing at all. That we should obtain some acquaintance with the subjects taught seemed the sole consideration; whether it could be made any use of, or whether we could apply it in teaching children, did not seem to be thought of. We were not told how to develop the intellectual powers of the young mind, nor were we told how to digest the matter taught us, so as to place it before young people in an intelligible form.

So far, then, as regards my own experience of the Normal School, I was taught very little, and was not told how to impart this little to others. There were a hundred things told us that we did not understand, either because the teacher could not explain them in a manner adapted to our faculties, or because he thought we knew them already. We were, consequently, not told to avoid presupposing any thing in children, and to make every thing placed before them perfectly clear. This "taking for granted" is fatal to well-regulated instruction, checking all development in young heads and hearts, and engendering the habit of pronouncing words without thinking of their import. Presupposing is a cancer in our schools. It certainly is difficult for us to go out of our knowledge and our wisdom, and make ourselves at home in such a small space as a child's head. Still more difficult is it to look about there for what it contains and what is wanting. Yet all this must be done by one who desires to teach a child, and find an entrance into its heart as well as its head. He must find out what is deficient in both, then steadily and cautiously

fill them up, as the bee in its hive, which, with wonderful instinct, first makes the combs, then builds up the cells, and finally fills them with luscious honey.

To acquire knowledge was the object of myself and fellow-learners at the Normal School. All deeply felt that the knowledge they possessed consisted of fragments, and deeply as they prized these snatches of learning, they knew them to be insufficient for their calling. All were hungry and thirsty, absolutely famishing for wisdom; but the means adopted at the school were incapable of supplying the want. We knew what we knew; but what it was, or how much it was, we had not the slightest idea; neither could we form a conception of what we required to know, save and except some names, such as construing. Real knowledge was hid from our view by an impenetrable curtain, such as hides the future from the human mind.

All of us had to struggle with a thousand difficulties in order to attend the training-school. Some had to deprive their families of their summer earnings, that could ill be spared—had to wear their Sunday clothes, which ought to last a schoolmaster many a year, and had to look forward to a winter of privation.

Luckily for us, we did not know that we were learning next to nothing. On the contrary, we fancied ourselves on the straight road to eminence; and were busily laying up a store of school lessons for future use. There was a man, who came every now and then to visit us, who professed extreme erudition. In oratory, he said, no man, be he layman or clergyman, could cope with him. He assured us that many things printed were inferior to his productions; adding, he did not compose any thing for himself, only for good friends who requested him to do so. We looked upon this man with profound respect, since he had progressed so far as nearly to have his productions appear in print. Therefore, we entreated him to favor us with some of his writings to copy. He very willingly brought us a few, giving the history of each, its conception, birth, and purpose. Once he lost a small sack-full of them; how, or where, we could never make out. Each of us would have been

delighted to have found them. But none of us, I believe, would, in such a case, have restored the documents to their proper owner.

Although, from the beginning, we had labored very hard, it was nothing compared to our zeal when the examination drew nigh, and our course of instruction was coming to a close. Then, we scarcely knew whether we were walking on our heads or our heels. Let no one suppose, however, that this increased diligence was merely the "examination fever." There were other causes of tribulation, the chief of which was, we had to appear before the Ecclesiastical Court at Berne. Our hearts throbbed through fear of being rejected, on account of some bit of knowledge forgotten, or something that we had not been taught. The fields of knowledge we knew still lay hid behind a thick veil. The teacher had handed us crumb after crumb; but how much there remained we knew not. We rejoiced over every morsel vouchsafed to us, because it was new, and because it was a morsel; and how proud we were if we succeeded in gorging it, though this was not always the case. There were a few among us who, possessing sluggish souls and inert bodies,

slumbered when they ought to have listened, and gaped when they ought to have been writing. Of these, we were ashamed; fearing that if the magnates at Berne began the examination with one of them, a bad impression might be formed of us all. For if once a gnat settles behind the ears of such personages, it is difficult to put it to flight; at least, without a deal of fanning and flutter.

If a man of sense and feeling had watched our proceedings at that period, he probably would have burst out laughing; but, at the same time, his heart must have bled with sorrow. Yet this truly was the way in which schoolmasters were trained.

There may have been normal schools that carried on their operations more intelligibly, although I never observed much difference between the pupils from different establishments of the kind at the examinations which I had occasion to attend. It was thought a schoolmaster might learn all he required in a few months, though it takes as many years to turn out a good tailor. From this, the light in which a schoolmaster and his acquirements were regarded by high and low, may be readily judged.

COMMERCIAL COLLEGES.

THESE institutions, like all others of value, originated in a public want, and have attained their present character and position by the development and growth of that want. Their first appearance in this country was in the form of a partial attempt to educate young men for business pursuits, by combining commercial arithmetic, book-keeping, and a higher order of penmanship, with studies not peculiar to such education.

This imperfect commencement was soon found to be inadequate to the popular demand, and led to the establishment of schools more exclusively and extensively devoted to the object that gave them birth. Pioneers conceived the idea of reducing

the experiences of the business world to a science which, like others, could be taught and acquired as an important preparation for the duties of active life.

Their systems of instruction, however, were entirely theoretical; and, though in their arrangement and explanation of the laws of trade and the forms of commercial intercourse they were thorough, and furnished their pupils with a comprehensive philosophy of their anticipated pursuits, they failed to give them the proper qualification to enter upon those pursuits. A mere knowledge of theory is but half the requisite preparation. To know how a thing *ought* to be done, and to be able *to do it*, are distinct attainments by no means

necessarily associated. Every vocation has its *science* and its *art*, and when both are mastered—as they must be to succeed—they exist in mutual dependence, one as a familiar theory, the other as a practical habit. The mechanic has a system of rules by which his operations are directed. These, of course, are matters of study, and must be understood; but alone they do not give him the mastery of his trade. He must learn not only how it should be performed, but how to *perform* it.

So the *merchant* who comprehends the *principles* only on which his pursuit is to be conducted, enters upon it comparatively incompetent and powerless. The capacity to discriminate the qualities of goods, to conduct shrewd and profitable trade negotiations, to estimate the value of property, to construct every species of contract, in a word, to perform all the various transactions that constitute the practical details of his vocation, must be acquired, or his theoretical knowledge will avail him but little.

Hence another and very important step was taken in this grand educational movement, namely, the addition of a department of *actual business* in which all the operations of trade and commerce are carried on, and students are brought in contact precisely as men are in the great mercantile world. They buy, sell, and barter; deal in all kinds of goods and real property; reduce to writing all forms of legal obligation; make conveyances, effect insurances, conduct banking operations, and negotiate all kinds of business paper, notes, bills, checks, and drafts.

Under this double training in the science and the art of their pursuit, they simply do what is done in every other—they learn their trade before they attempt to practice it. This is the universally accepted philosophy. Even for the easiest and simplest avocations a course of preparatory instruction and drilling is deemed indispensable. And why should it not be in the great and complicated pursuits of commercial life? To supply this desideratum commercial colleges are now furnishing facilities.

In addition to the more immediate and legitimate objects above referred to, it was

found desirable to afford to students the means for acquiring the arts of phonography, telegraphy, and ornamental penmanship; and these are now incorporated with the system.

Thus has the commercial college become a great, necessary, and permanent institution, with a wide field for operations; and it is destined to produce unexampled effects upon the business character and social destiny of the country. To the vast multitude of young men about to enter upon the theatre of public activity and enterprise, its importance cannot be overstated. It offers them an opportunity for mastering the principles or practice of their vocations before they are assumed, which gives them an advantage over all others, brings their services into immediate requisition, and secures to them at once a competent remuneration.

But with all the improvements which these important schools have made in their practical designs and modes of instruction, they still retain one gross and obvious imperfection. The elementary studies which enter into their system of education are many and difficult. And yet, with all these, together with a great variety of practical exercises, they promise to make the pupil familiar in the short period of twelve weeks. This proposal is a false, not to say fraudulent, assumption. It carries its absurdity on its very face. Its realization is a practical impossibility. That this allegation is true is the plainest suggestion of common sense. And before these institutions can receive the respect and patronage which their high objects and successful operations ought to command, they must abjure this limited course of necessarily superficial instruction and training, and make a year, or at least six months, of actual membership and assiduous application indispensable to graduation. This high ground, we are happy to see, has been assumed by one, and we believe by only one, of these numerous institutions. It is Burnham's American Business College, in Springfield, Mass., which seems now to have no rival in the thoroughness of its course, in the honesty and practicability of its promises, the extent of its popularity, and the consequent rapidity of

crease in the number of its pupils and
age of its influence. These advan-
have been the double result of
or management and an extension of
ne of its scholarship to a period

more consistent with the knowledge to be
acquired and the practical skill to be
attained. We are convinced that the
Springfield school has just claims to public
confidence.

ACCENT AND EMPHASIS.

a strange fact that in our American
ading-books, most of which have
ate and otherwise appropriate trea-
n elocution and declamation, there
ting a distinction between the *regu-*
l the *irregular accent*, and between
regular and *irregular emphasis*. The
common or grammatical accent
phasis is not spoken of, while the
ar or rhetorical are enlarged upon.
eem to presuppose that each pupil
, or at least that the teacher can not
know, where this regular accent and
sis take their places, and that, there-
is necessary only to point out the
ical use of these two means of
z language intelligible and beautiful.
is obvious that the pupil must learn
o read *correctly* before attempting to
beautifully.

nt is a stronger intonation given to
llable of several constituting a word.
ntonation consists not only in a
pitch, or key-note of the voice, but
a greater *force*, or volume of sound,
the rest of the syllables of the same
be slurred both in pitch and force,
less in the time devoted to pronun-

phasis is a stronger intonation given
word of a sentence composed of
words. This intonation or *accent*
sentence consists, likewise, both in a
pitch and a greater force of the
so that the balance of words in the
e be comparatively neglected in
pects, and less time spent in their
ciation.

nt and emphasis are means to make
ge intelligible, by subordinating in
nd force and time of pronunciation
eral components of a word or a sen-
o the most important of its syllables

or words, so that the word or the sentence
appear as a unit, an organism. Pronoun-
cing, for instance, the word *godliness*, we
lay stress on the first syllable *god* (we
accentuate it), and less stress on the other
two syllables *liness* (we slur them), in
order to make the hearer understand that
these three syllables form one word. In
pronouncing the sentence, "All men must
die," we lay stress on the word *die* (we
emphasize it), and lesser stress on the first
three words (we slur them), in order to
make the hearer accept the four words as
a unit, an organism.

In all unmixed or original modern lan-
guages the *accent* falls on that syllable of
the several constituting the word which
contains the *root*, and has, therefore, the
greatest significance among them. So it
was also in Anglo-Saxon. But in poly-
syllabic words there may be a second, nay,
even a third accent besides the main accent
(the secondary and tertiary being weaker
in pitch and force than the primary), in
order to facilitate pronunciation and intel-
ligibility. In mixed language, such as
modern English, this law is, as a rule, so
far disturbed, that words belonging to the
original stock (in our case, Anglo-Saxon)
follow the above general law, while words
adopted from a foreign tongue follow, more
or less, the law of accentuation proper to
these tongues.

In compound words the accent (the
grammatical accent) is regularly on the
first component, while the second or third
is the bearer of the notion, determining
whether it is a noun or a verb, etc.;
whether it is singular or plural, masculine
or feminine, etc.

In a sentence, the *emphasis* (the *gram-*
matical emphasis) is regularly on the *pre-*
*dicat*e; or if the predicate has a *complement*,

it is on the latter; or if the complement has another complement, it is on the latter, and so on. Examples:

The moon is a satellite.

The moon is a satellite of the earth'.

The moon appears'.

The moon appears in the horizon'.

The moon appears in the horizon of the observatory'.

The moon appears in the horizon of the observatory of Paris'.

If the sentence is long, it may be made more intelligible by a second and even a third emphasis, subordinate in degree to the primary. Thus, in the sixth of the above sentences, *horizon* may have a very weak, *observatory* a slightly stronger, but *Paris* must have the strongest emphasis.

This is the very simple and rational theory of the grammatical emphasis, to which may be added a few rules, the reason for which will be given below.

1. The *copula*, or auxiliary verb, never has the grammatical emphasis. 2. The subject has it only when by inversion it is placed at the end of the sentence. 3. An adjective never has the grammatical emphasis. 4. And the negation has no grammatical emphasis.

The very simple reason for these laws of all language is the following: The most significant word of a sentence is that which brings in something *new* before the attention of the hearer. The subject is presented to him as a well-known thing, of which he is to learn something new in the predicate. Therefore the latter, not the former, is emphasized. But if the predicate is modified by some complement, it is the latter which engrosses the attention. In the sentence, for instance, "The moon is a satellite of the earth," the hearer is supposed to know already that the moon is a satellite. It is the new fact that the moon is a satellite of the *earth*, and of no other planet, which is predicated, and to which his attention is invited; wherefore, *earth* is pointed out as the word deserving the hearer's attention. In the sentence, "There was a conflagration," the subject is *conflagration*, the predicate *there was*; but the latter, mentioning only the fact of existence, is unworthy the hearer's attention; and it is for this sole reason that the

sentence is inverted--the subject placed in an uncommon place and emphasized. The auxiliary verb never contains a notion, but is only a form-word, showing relation between subject and predicate, and fails, therefore, to engross the prominent attention of the hearer. The adjective has no grammatical accent when it is an attribute, because it does not predicate any thing new, which it does only when predicatively used.

It is for the same reason that, in a compound word, the *first component* is accentuated. The latter contains the new thing, or quality, or property, or relation of the second, to which the hearer's attention is to be drawn.

How important it is that the pupil should first instinctively learn how to place the grammatical emphasis, and next should understand the above simple theory, before attempting the rhetorical use of emphasis and the understanding of the rhetorical theory, a few examples will show. In the sentence, "The king is dead," the predicate *dead* will have the regular or grammatical emphasis, if the death is to be mentioned as the new thing before unknown to the hearer; but *is* may be rhetorically emphasized, if a doubt of the fact had preceded and is to be set aside; and *king* may be emphasized, if there is, rhetorically, a doubt presupposed about the dead *person*, which is to be solved. Now, how is the child--the beginner in reading--ever to find out the difference between the ordinary and the extraordinary *meaning* of the sentence, if he does not feel the difference between the ordinary (grammatical) and the extraordinary (rhetorical) *emphasis* of the sentence? How is he to apply a correct exception, if he does not know the correct rule; if his feeling, taste, or instinct is not so trained as to intonate always the predicate, or the modification of the same, as conveying the real news and purport of the sentence as long as there is no visible, tangible, unmistakable criterion of the sentence being rhetorical? In the sentence, "Charles is a good boy," the regular intonation rests on *boy*. Emphasizing *good* would indicate that a doubt had been expressed about his character. Now if the beginner be so trained as to emphasize *good*

always, even though such a doubt had not been entertained, he loses gradually the perception of all that is poetically beautiful, or rhetorically significant or sublime, because it is the uncommon in emphasis which is bearer of the particularly significant, the beautiful, or sublime.

There is much barbarism in our American elocution and rhetoric, owing to the fact that our teachers do not lay a sufficient foundation in correct grammatical accentuation and emphasizing before embarking with their pupils in rhetorical elocution. We give here a number of cases of incorrect accentuation and emphasizing, such as are likely to pass unrebuked in many of our schools:

WRONG.

1. This is none' of your business.
2. He will be here to-night'.
3. They are no' better than they ought' to be.
4. Our sun is, perhaps, the smallest' of all suns.
5. You devote yourself entirely' to dancing.
6. Lukewarm'. Housekeeper'. Burgomaster'. Alini'ghty. To wake' up. Steam-engine'.

CORRECT.

1. This is none of your business'.
2. He will be here' to-night.
3. They are no better' than they ought to be'.
4. Our sun is, perhaps, the smallest of all suns'.
5. You devote yourself entirely to dancing'.
6. Luke'warm. House'keeper. Burgo'master. Al'mighty. To wake up'. Steam-engine.

In all the above examples, what we call the wrong emphasis and accent is, indeed, not wrong in itself; but only it is not the *grammatical*, it is the *rhetorical*, intonation which ought to be reserved for the expression of the less common cases, when there is either an opposition to be expressed or implied, or some other rhetorical purpose to be attained.

For such of our readers as are not conversant with "Comparative Philology" and "Becker's Reform of the Grammatical System," it will be necessary to state that there are two kinds of objects or complements of the predicate, to wit: the complement *proper* and *improper*. The former is that which *modifies* or more closely *defines* the predicate, more or less alters its meaning, and therefore forms, as it were, *one* word or expression together with it, while the latter only completes it. In the sentence, "Make way!" the predicate *make* is so modified by its direct object, *way*, as to form a new notion together with it. But in the sentence, "I simply obey the law in every respect, and at all times," *law* is the modifying, "in every respect" and "at all times" are only completing objects. The former is that which has the grammatical emphasis. The entire subject demands greater consideration.

LITERARY NOMENCLATURE.

THE fashion of using odd phrases and mottoes, as titles for novels, is ridiculed by an English satirist, who has made good use of publishers' circulars.

"Belial," he says, emerged "By the Sea;" advancing against "Wind and Tide" he saw, "Beneath the Surface," "Breakers Ahead." This was "A Bad Beginning"—a kind of "Notice to Quit;" so he turned into "Belforest," and encountered "Some Famous Girls" (both "Black and White"), who have since become "Famous Women." He beheld "Eleanor's Victory" and "Christian's Mistake," and heard "Cary's Confession." Here be "Shattered Idols" and "Singed Moths," quoth he; "Grasp your Nettle," but "Look before you Leap," for "Who Breaks Pays." It was just

the "Darkest before Dawn;" but Belial perceived "The Woman in White" fighting with "The Man in Chains," and "How to Manage it" she did not know. "Once and Again" she seemed "Lost and Saved;" but at last she inflicted the "Oru-elest Wrong of All," and fled, crying out "Quits!"

Verily, a "Strange Story." But our American publications afford material for as marvellous a narrative. Think of "Angelina Shoddy," "The Scout in Crinoline," spending "A Week at Saratoga," then left "All Alone" "Among the Pines," and going into "The Wide, Wide World" with "Nothing to Wear" except "Fern Leaves." Surely, the situation is "Peculiar."

AMERICAN EDUCATIONAL MONTHLY.

NOVEMBER, 1865.

THE IGNORANCE OF SCHOOL-TEACHERS.

OF all professional men, teachers are the most ignorant. We do not refer to that kind of ignorance recently shown in New York, when teachers, in sending information concerning needed school supplies and improvements, wrote *cole* for coal, *sense* for fence, etc., and in protesting against a newspaper article on the subject, stigmatized it as a "vindictive correspondans." We are not led to the subject by the result of an experiment in a Western State, where twenty words being pronounced, and twenty teachers required to write them, it was found that nearly one-half the teachers misspelled nearly half the words. Many a learned man is an incompetent teacher; but these persons unable to spell words in common use were not entitled to the name of teachers. And among tolerably good instructors there is often a want of familiarity with some study, or of appreciation of the pupil's character and capacities,—ignorance, in either case, which proves embarrassing to one party and disadvantageous to the other. But it is not on this even that we would dwell. The nature of the ignorance we refer to will be comprehended when we ask, Why is it that men study or learn? What are the advantages of knowledge? Is it of any use to be learned, if learning confers no grace, power, capacity, on life; no readiness, quickness, dexterity, no adaptation to circumstances, no extension of vision, no cosmopolitan feeling, in this age of antagonisms and assimilations?

How is it with some teachers—with many? Here is one for a specimen. He is a worthy man, competent and faithful

in the discharge of the duties assigned him. But what does he know of the general application of scientific principles, of the curious relationship of man to the vegetable world, or even his true position in the animal kingdom, on which modern investigation has thrown so much light? He may be familiar with some of the details, but how does he view the grand landscapes of geology and geography,—where lines cross continents, where are seen the natural boundaries of empires, the causes of climatic vicissitudes, the sources of national wealth or poverty, and even the formation of human idiosyncracies?

What! we have taken him to too high a sphere? Well, stand him in his natural place; view him as a man in practical life. For a man he is, in one sense; and a true and great man he, of all others, should be in every sense. Bowed, wrinkled, and careworn, if old—stooping, and pale or sallow, if young—he is practically ignorant of the laws of his being, has virtually ignored all physiological principles. Year after year, shutting himself up with his pupil-prisoners, he has breathed its poisonous vapors and been the autocrat of his little kingdom; and now his figure and manner testify concerning his cares and administration. The bronchitis of which he complains was not caused by talking to scholars, as he supposes, but by the want of pure air in his school-room, and of sufficient air of any kind in his lungs while speaking. Escort him into your parlor, and his awkwardness is a novelty for your wife; and only good-breeding restrains her friends from nudging each other, if, happily, good-breeding is thus potent in such an exigency. Listen to his conversation. To your more conspicuous friends he shows a deferential complaisance which amounts to servility, but he has a peremptory positiveness of manner; he dwells on details; his conversation flows on without the ripple of the rivulet, yet without the

broad bend and sweep, and especially the rich freight, of larger streams. But go about with him among his neighbors: the mechanics are astonished at his questions, not because of the depth, but rather dearth of knowledge which they evince. Among the energetic, far-seeing men who project and lead the various enterprises of the age, he is as obscure, and as much out of place, as a schoolboy would be at a political caucus. Finally, take him with you to a lawyer's or a broker's office, to your own shop, or warehouse, or counting-room, and though he may be able to unlock for his pupils the mysteries of the "higher arithmetic," even without the "teacher's key," you may obfuscate, circumvent, entrap, and defraud him more readily than men of any other profession, the clergy even not excepted.

The popular reputation of the teacher does not seriously conflict with these representations, and poets, novelists, and artists have had no difficulty in finding living subjects enabling them to represent greater extravagances of ignorance than are here delineated.

The facts of the case are so obvious that, when teachers discuss the question whether theirs is a "learned profession," they have feelings and motives similar to those which actuated a religious convention a few years ago, when, after an elaborate philologico-theologic investigation, the signification of the words *doctor* and *divinity* was satisfactorily determined by the delegates in attendance. They "resolved" that all the clergymen of their denomination were doctors of divinity, and for awhile village pastors and school-house preachers were exchanging congratulatory epistles bearing on the superscriptions a conspicuous "D. D."

The teacher should be—he *must* be, if he would hold his true position and keep free from moral indebtedness to society—an active, affable, popular man; quick, but

not hasty; dignified, but not monkish, churlish, and cynical. He may be far-seeing in his philosophy, but he must not be blind to tricks of trade. He may be familiar with his text-books, but he must not be ignorant respecting the problems meeting his eye on every page of the great book of life. With such qualifications for his general duties as a man and citizen, he will in his professional labor use his ferule with more assurance of making it the lever by which to move the world.

Giuseppe Giusti, recalling his student-days, wrote, in pure Tuscan, some stanzas, one of which we present in pretty blunt English, as especially suggestive to the schoolmaster:

You may con, time by time,
All that learning can span,
And be dubbed LL.D.;
Yet be never a man.
If within your four walls
You learn action alone,
You will stumble, be sure,
On the first outer stone.
From doing to talking
'Tis pretty wide walking.

It is bad for the teacher to sleep during school-hours; but it is far worse for him to go moping or dozing through the turns and angles, the whirl and tumult, the frivolities and labors, and all the nameless changeable conjunctures of practical life.

SERIOUS THOUGHTS ABOUT FUN.

IT was Dr. Holland, we believe, who once said that *play* is needed for men and women *as much* as for boys and girls. He stated a fact which we do not deny. But it is not true that *as much play* is needed by men and women as by boys and girls. And here we state a fact which probably none would deny, and for which no proof is necessary. But if any one should assert that school "amusements" are always real diversion, we would take to argument. To tell the truth, there are

many persons, some teachers even, whose convictions would tempt them to such an assertion. If they would scrutinize the dull features of boys, who often, while engaged in gymnastic exercises, are looking about with wandering, listless eye—if they would take the hand of a girl who has gone through a half-hour's calisthenic enjoyment, when perhaps her health did not warrant her in coming to school, and observe her finger-tips, shrunken and shriveled as though recently taken from a dish pan—they would be apt to waver in their belief.

We have no desire for a contest, physical or intellectual, with any gymnast, and we are making no effort to topple gymnastics. Calisthenics sometimes do more for the mental faculties of pupils than all their text-books. What we would inculcate is the necessity of a greater proportion of actual self-selected diversion. That which is recreation and diversion to the man, it has been truly said, is often an accumulation of fatigue for the child. Greater reliance should be placed upon amusements of his own choice than upon exercises, motions, and even plays, prescribed after a preconceived plan. At an early age, one duty can not afford relaxation after another duty. On the contrary, when an amusement is *imposed*, it becomes a new fatigue. Recreation and play are necessary, but only on condition that they must be voluntary, free from that contention of mind which is caused by doing a thing by compulsion, or for the sake of obedience. Amusement, without perfect freedom of choice, is void of pleasure; and it is only pleasure which gives the charm to amusement, and by a natural reaction of the moral and physical elements, renders it salutary. Compel a boy to play "hide and seek," and at the end of a quarter of an hour he is tired of it. But had he chosen this he would not be tired of it at the end of two hours. Parents or teachers who pretend to make the physical alter-

nate continually with the moral and intellectual education, by arranging after their own idea the exercises of the one and of the other, and who, holding the child by the hand, compel him to go round a prescribed circle, condemn him also to a slavery as tedious as it is useless. In order to obtain a good physical education, amusements and plays are of the greatest importance. These can not be of any profit except on two conditions, the one being as essential as the other—pure air and perfect freedom.

THE MICROSCOPE—A HINT.

THE Microscope is yearly becoming more effective in our scientific manipulation, and scarcely a week goes by without some practical use being assigned it. Microscopy, however, is rarely heard of as a school study. It should have a place in every high-school where a competent teacher can be procured to make known its utility, and teach the more important of its illimitable applications.

In the British metropolis a movement has been made which we would be glad to see repeated here, and which in the city of New York is perhaps not impracticable. A Microscopical Club has been established in London, with the view of giving to microscopists ample opportunities for meeting and for exchanging views and specimens, and discussing doubtful points of general interest.

Here few devote much time to microscopic investigations, and many who have a general appreciation of the subject could contribute but little for the information of others. But the subject possesses charms as well as utility, and it would doubtless be found that in the carrying out of the enterprise here suggested, there will be found sufficient inducements to cause every member to bring his views, facts, and specimens for the building up such an association.

EDITORIAL CORRESPONDENCE.

PHONOGRAPHY—A REPLY.

BRIGHTON, Mass., October 6, 1865.

PERMIT me, Mr. Editor, to defend myself from the charge of having been too severe in my strictures on Phonography in a previous article. The interests of science demand candor and truth. I do not wish to misrepresent the facts of the case, and there need be no difference of opinion, for the truth can be searched out. Your correspondent "can show that Phonography, instead of having fallen into disuse, is steadily gaining ground." I hope you will allow him to prove a fact so important to our educational interests.

To aid him with a basis, I add the following statistics. In 1857 a catalogue of all the phonographers that could be induced to report to headquarters was published in Cincinnati. It contains the names of about three hundred phonographers, of whom only forty-five could write as fast as one hundred words a minute. Twelve were clergymen. Assuming that only one-half of the phonographers of the country were comprised in this catalogue, we have six hundred in all—thirty who could make a decent verbatim report, and twenty-four clergymen who used the art.

Now will Mr. A., for the good of science, give us reliable data on which we can make a larger list to-day? And as to the multitudes of clergymen who use the art for writing their sermons, will he send the editors of the "Monthly" a list of twenty-four who now do employ the art in this way? I do not say that he can not do this, but I would respectfully suggest that a failure to find even a much greater number would exonerate me from any undue severity in former remarks.

I add a few extracts from letters of clergymen, to show the tone of feeling.

Rev. Thos. Easton says: "After a long and tedious effort at Pitman's system, I am compelled to abandon all hope of its utility to me as a clergyman."

Rev. P. V. Vedeo says:—"Counting myself one of the fifty thousand persons who have learned Pitman's system and not been able to make much practical use of it, I have a great desire to see if you can not furnish

me with that which I have failed to find elsewhere—a legible, easily legible system of Phonetic Short-hand. I am a clergyman, and preach mostly from my manuscript, etc."

Rev. W. T. Wylie says: "I am a minister, and have charge of an academy; hence you see I have good reason to feel an interest in Phonography. I have often wished to learn it, but Pitman's system seemed impracticable unless I could use it continually."

Rev. Plumer Chesley says: "Pitman's system (of Phonography) is brief, but not simple. *It will never come into common use.* The public groan to be delivered from long-hand jumbles, but Pitman's Phonography is not the deliverer. The system that is wanted is so true to sound that the marks used shall exactly represent those sounds—one mark only for a sound. Written sound is the thing to be attained. The shape, not position, of vowels must constitute their kind. So simple must it be that a few brief, easy lessons shall compass its attainment."

Rev. William Pillenger, author of "The Great Railroad Adventurer," says: "I have high hopes for Tachygraphy. I find it to be of more and more use to me, and this makes me believe that it will be of use to others. I now write it with an ease that I do not think I could ever have attained in Phonography, although I have not studied it one-tenth as much. We only need time and enterprise to make Tachygraphy the common writing of the land."

Rev. A. C. Row, Chaplain Third Division, Fifth Corps, says: "I am much pleased with the system. I found it of the greatest value on the last marches of our corps, where I had to take many notes, and do much writing on horseback, while in motion. I could write legibly in Tachygraphic characters; my long-hand I could scarcely read when cold. On the late moves I have been constantly topographing the country as we passed, and have found the art worth more than the labor it cost to master it already."

[This was written with only a few weeks' practice of the art, and shows how soon it will repay a man of activity for the labor of acquiring it.]

These are a few testimonials, selected from hundreds of like import.

L.

EDUCATIONAL INTELLIGENCE.

NEW YORK.—Teachers' institutes, for the present season, have been organized in the thirty-three counties which we have heard from. In Delaware, Monroe, and Wyoming respectively, two institutes have been pro-

jected. The "Livingston County Teachers' Institute" began its ninth annual session on the 25th of September, and has not yet completed its work, arrangements having been made for a session of six weeks' duration.

There is an evident intention of making this session the most interesting and profitable of any ever held in the county, and we believe that the institute itself will become a model. The faculty embraces twelve experienced teachers; and among the lecturers are Hon. V. M. Rice, James Atwater, Esq., President N. Y. S. Teachers' Association; Edward Danforth, Esq., Superintendent of Public Schools, Troy; Prof. James H. Hoose, of Genesee Wesleyan Seminary; Rev. J. Jones, of Genesee Academy; Rev. W. A. Niles, Rev. W. N. Irish, T. S. Lambert, M. D.; Prof. C. W. Sanders, Robert H. Fenn, the blind poet. The most approved methods of teaching have been adopted, including the latest features of the normal schools of New York, Massachusetts, and Ohio. To the teacher sustaining the best examination in "Intellectual Philosophy" a set of "Cleveland's Compendiums of Literature" is to be awarded, and various prizes for excellence in other studies; and the school district making the most improvements in school buildings and grounds is to receive a school-house-bell and fixtures. The enterprise shown by Livingston County should prove stimulating elsewhere. What county will compete for the honors next year?

Dr. Nott, the venerable president of Union College, now ninety-three years old, is failing rapidly.

CONNECTICUT.—The fall term of the Wesleyan University at Middletown commenced August 31. About fifty have entered the freshman class, and eight or ten the upper classes. The university was never in a more prosperous condition than at present. It is expected that measures will be taken for the immediate erection of the new library building, the required means having been pledged last commencement.

MASSACHUSETTS.—A school of mining and practical geology at Harvard College is to be opened in close connection with the Lawrence Scientific School, on the first Monday in October. Samuel Hooper, of Boston, made the magnificent gift of \$50,000, as a nucleus for the endowment of the school.

Mrs. Waters, of Brookline, Massachusetts, has contributed \$5,000 to the scholarship fund of Brown University, and \$5,000 to the University of Rochester, toward the endowment of the Strong-Place Professorship.

PENNSYLVANIA.—The Legislature last year appropriated \$50,000, and this year \$75,000 for the care and education of her soldiers' orphans. The plan adopted is worthy of imitation. No money is invested in buildings and fixtures; but arrangements are made with schools already in operation, whereby each institution provides for and educates a certain number of orphans for a definite period, say one year. In this way the children are retained near their friends and early homes, and are brought under the beneficial influences of well-regulated fami-

lies and schools. The entire management is under that well-known educator, the former State superintendent, Hon. T. H. Burrowes.

At the recent commencement of Westminster College, the degree of LL.D. was conferred on the Hon. Samuel P. Bates, deputy superintendent of common schools of Pennsylvania. The announcement of this deserved honor will be received with pleasure by his numerous friends.

OHIO.—The Rev. Charles G. Finney has resigned the presidency of Oberlin College, on account of advanced age and uncertain health. He will continue to teach and lecture in the theological department as heretofore.

By the weekly report of the superintendent of the Cincinnati public schools, we learn that there are 931 more pupils enrolled in the schools now than there were at this time a year ago.

DISTRICT OF COLUMBIA.—W. W. Corcoran, Esq., of Washington City, has presented to the corporation of Columbian College his fine building situated on H-street, between Thirteenth and Fourteenth-streets, now occupied by the United States Government as a surgical museum. The building is 60 feet long and 36 feet wide, having 5 feet of vacant ground on either side, and about 21 feet in the rear, and the property is valued at about \$30,000.

There are in Washington nine colored day-schools, whose teachers are supported by tuition fees. There are also twenty-five free-schools, supported by the philanthropy of the North, and eight free evening-schools, voluntarily taught by clerks in the different departments. Neither in its corporate nor individual capacity does the city of Washington pay one cent for the instruction of its colored citizens.

VIRGINIA.—The Virginia colleges are now in the hands of the Lee family. Robert E. is president of Washington College, and his son, George W. Custis Lee, has been appointed professor of engineering in the Lexington Institute. The board of visitors appointed by Governor Pierrepont are, with two exceptions, original rebels.

WEST VIRGINIA.—The township system has been adopted. Free-schools are to be maintained six months each year in every neighborhood having pupils enough for a school. Provision is made for establishing high-schools in each township.

MICHIGAN.—Prof. Welch has tendered his resignation as principal of the State Normal School, which position he has occupied ever since its foundation, and intends to remove to Florida. Michigan thus loses one of her most earnest educators, and a man zealous in the cause of educational reformation.

KANSAS.—In the fourth annual report of the superintendent of public instruction, several important amendments to the school

laws are suggested: 1st. Compensation to school officers. 2d. Authorize and require each district officer to subscribe for the *Kansas Educational Journal* at the expense of the school district. 3d. A law securing a uniform series of text-books in each school district of the State. 4th. Any school district failing to sustain a school three months each year, to lose its identity at the end of two years.

CALIFORNIA.—The city Board of Education has subscribed for one hundred and fifty copies of the "*California Teacher*" to be supplied free to the female teachers of the Department.

—The number of colleges in the loyal States is as follows: Maine, 2; New Hampshire, 1; Vermont, 3; Massachusetts, 6; Rhode Island, 1; Connecticut, 3; New York, 20; New Jersey, 3; Pennsylvania, 20; Maryland, 10; Delaware, 1; Ohio, 24; Illinois, 15; Indiana, 13; Kentucky, 8; Iowa, 7; Michigan, 4; Missouri, 11; Minnesota, 3; Oregon, 3; Wisconsin, 10; California, 4. Total, 172—at least 125 too many.

GREAT BRITAIN.—One thing in which her majesty's inspectors of schools, whose reports have been issued lately, agree, is that women are least satisfactory as teachers of arithmetic. There are complaints, too, on the score of handwriting. The "excessive prevalence" of small-hand is, in particular, a grievance. "I wish," says one inspector, "teachers would remember that, in the words of John Locke, 'every one naturally comes by degrees to write a less hand than he at first was taught, but never a bigger'; and that, therefore, he who learns at school to form every letter well, on a large scale, will fashion a good small-hand for himself afterward without teaching; while he who writes nothing but small-hand at school, will never be a good or legible writer as long as he lives." Another inspector bitterly denounces the "ladies' angular hand." The "reading" in the schools is generally improved, though the standard, in districts like Cumberland, Westmoreland, and Northumberland, is not very high. Mr. Fearon, the inspector for the Church of England schools

in those counties, observes: "The harshness of the Solway, Lake, and Tyneside dialects, seeming in the latter to amount almost to a physical imperfection, together with the natural pride and strong sense of the ridiculous in these north countrymen, militate against good reading aloud. I remember, at a school in the Lakes, where some pains had been taken with reading, but where the scholars had been as usual torturing me with a noise more worthy of parrots than of English children, that a little girl got up in the second class and read with fluency, sweetness, and an intelligent articulation. On inquiry, I found she had lately come from London. To me her reading was a refreshing interlude, but I could see that to the other children it was broad farce—something to be a little amused at, and a good deal despised." Mr. Jack, reporting of the Church of Scotland and other schools, complains of the mode in which geography is taught. It appears that there is a class of schools in which South America is the favorite map. The children are familiar with Venezuela, Ecuador, and the names of the tributaries of the Amazon or the La Plata, but can not point out Glasgow or Liverpool. "The master attacks his subject as it might be well to do were his pupil an inhabitant of another planet, in whose company he happened to be approaching the earth; when it might be proper to begin by informing him first of the globular shape of the earth, of the millions of square miles of land and of sea, and of the general shape and outlines of the four quarters of the globe, and when it might be out of place to touch too soon upon the subject of Great Britain or any little special county in it. But his pupil is a child whose first ideas of geography are taken from the nearest village, rivulet, and hill, and who by the time his teacher has got him past South America, with its hard names, is off to the engrossing labor of a working-man's life. He has already acquired ideas of space and locality for himself. Why should his master not condescend to start, hand in hand with him, from his familiar home center, and show him afterward, if he has time for it, how large is the world?"

CURRENT PUBLICATIONS.

WHAT the boys and girls did for reading in very old times, when books were regarded as an institution for grown people, and the small amount of juvenile literature in existence was mostly of that primer and spelling kind, that was generally applied with the help of a small stick to the understanding, like Day & Martin's blacking to the shoes, we cannot say; but we remember that in our own not very remote childhood, there

was a sad dearth of material for little eyes to pore over, and the least roll of paper that looked like a picture-book was a precious godsend. It is positively true, that among our most fervent causes of joy in boyhood, at the coming of the New-Year, was the prospect of having a new number of the old *Farmer's Almanac* to devour eagerly—stories, riddles, weather notes, moralizing, and all at one sitting, if possible—and then to

fumble over it again and again, until the old year should wear out and January come in sight again.

Times have marvelously changed, and the favored class of children, ours among them, have a larger and better supply of books now than were generally to be found of old in a fair average family library. It can not indeed be said that there is no chaff in the wheat, and that our juvenile literature is as memorable for its quality as its quantity; yet, quite sure we are, that there is as much good reading now for children as their brain can properly receive, and the great need is not so much of a new supply as of a judicious selection from the materials already on hand or regularly forthcoming. It is on this account that we are friendly to the magazines for children that concentrate so much ascertained truth, and give so much innocent amusement in short, taking articles; and throw, moreover, the light and charm of apt and handsome illustrations upon whatever articles are helped by the aid of the pencil and the block. Our established writers here also appear in a new field, with all their well-won honors; and our young people are glad to take them by the hand and be led on from month to month under their kindly care.

We will take for our text the new illustrated magazine, "*Our Young Folks*,"¹ published by Ticknor & Fields, and just finishing the third quarter of its first year. The prospectus was somewhat startling, in announcing for its editors three persons of established name in our letters—J. T. Trowbridge, Gail Hamilton, and Lucy Larcom; and thus declaring that the new work, though meant undoubtedly to be full of pleasantry, was to be no joke, but a very earnest and laborious enterprise, under talents the most various and effective. It is simple justice to say that the promise has been more than kept by the performance. The editors have done worthily, and kept their high reputation, and have been greatly favored in the list of contributors whom they have called. Mrs. Stowe, Edmund Kirke, Dio Lewis, Carleton, Mayne Reid, J. G. Whittier, Mary K. and Harriet E. Prescott, T. W. Higginson, Rose Terry, H. W. Longfellow, John Weiss, Louisa M. Alcott, M. T. Canby, L. Maria Child, Maria Douglas, Anna M. Wells, Tacie Townsend, Mrs. Diaz, J. H. A. Bone, T. B. Aldrich, and many others of note are on the title of contents. Where can more ability be found within the same compass, and where a greater variety of themes freshly handled?

Here are, of course, stories of different kinds and qualities, yet not one that we would willingly spare, although our preference is for those simple, touching, truthful, home narratives, that present nature and life at once to the mind and heart of childhood. Mrs. Stowe be-

gins the January number with a gem of this sort, in the exquisite sketch of a humming-bird, "*Hum, the Son of Buz*." Mr. Trowbridge follows her lead well in his serial, "*Andy's Adventures*;" and gives proof that the gentle wisdom of our day may guide a few that can call up all the weird spirits of the old gothic times. Then Carleton's "*Winning His Way*" takes the hearts of all the boys, and, of course, does not leave the girls wholly indifferent to his merits.

Without going into a full characterization of these and other stories, we note the large scope of the magazine—its admirable sketches of natural scenes and objects; its historical and biographical narratives; its tales of adventure, such as Mayne Reid's; its excellent hints on health; its good specimens of poetry, winning in simplicity and beauty—though, perhaps, a few pieces may be a little over the heads of most young folks; and last, but not least, the best collection of charades and rebuses.

There is no set theology in the work, nor any formal preaching, yet a good spirit issues through its pages, and the morals and tempers of the readers will be safe so long as Father Bright hopes is their spiritual adviser, and Gail Hamilton their humorous censor, and Lucy Larcom their loving minstrel.

The editors mean to be liberal in their allowance of fun as well as of wisdom to their readers, and the lessons in magic may teach a grave moral as well as raise a merry laugh about many a fireside of a winter's night, by showing that things are not always what they seem, and all is not gold that glitters.

We can think of many articles that might be written for this monthly that have not been written, and it is easy to suggest whole branches of topics suitable for series of papers. But the wonder is that so much has been done and so well thus far, and that the public have been as ready to appreciate the high merit of this beautiful and generous juvenile magazine as the editors and publishers have been to provide it. In such an undertaking considerable capital is needed, and we commend the publishers for their generous outlay.

There is one encouraging fact that should cheer all parties concerned. When the year is finished, the numbers make a charming and complete volume, with admirable illustrations, and after giving delight to each new month with their single gems, they will crown the New Year with their whole diadem of jewels. We may have written a little strongly of the merits of this work, but the subject is somewhat of a hobby of ours, and as old Admiral Farragut said when he brushed away the tears from his eyes with his gold-laced sleeve, when he heard a thousand little children sing their hymns at school, "'Children are my weakness,' and what pleases my children pleases me." This weakness is no proof of foolishness, however,

(1) *OUR YOUNG FOLKS*. Boston: TICKNOR, FIELDS & CO. Large 12mo. \$2.25 per annum.

either in us or the admiral, for that tough old sailor, after he had cried over the children, sailed into Mobile Harbor with his body lashed to the rigging, that he might keep his place, even if wounded, and give through his trumpet the word of cheer to the right flag, and of downfall to the wrong. We commend "Our Young Folks" to all staunch patriots like him, for it is full of sound American principles for boys and girls, and everybody else.

Latin composition has never received from American educators that attention which it deserves. This has arisen from two causes: first, a lamentable want of thoroughness in our curriculum; and, secondly, this system has not produced teachers who have been able to raise the standard with any degree of rapidity. In exactly the ratio that the standard of a Latin education rises, in this ratio will increased attention be paid to Latin composition; and, conversely, we must urge that greater care be given to Latin composition in order to raise the standard of Latin scholarship.

We hail with delight any book which will take a single step toward freeing us from the thralldom of the wretched examples and still more wretched system of Arnold, which seems to reign almost supreme in our preparatory schools. In no department of study is there greater need of new books.

Dr. Smith's *Principia Latina*³ is a great improvement upon Arnold, in system and exercises, and we recommend it to those who wish a short course in composition. Those who wish thorough and lengthened exercises must look elsewhere. We notice two or three points to which we must take exception.

The nomenclature of the tenses leads him to call the perfect the present-perfect. This is too much like the division of the perfect, by Arnold and others, following Zumpt, into the perfect-definite and indefinite, which distinction does not exist in Latin. The perfect, like the pluperfect, is used as a secondary tense, and all deviations from this are exceptions.

He proposes to introduce a simpler and easier classification of the third declension. On p. 11, he says that the "stem" of *urbis* is *urb*, and ends in *b*; on p. 17, that the stem of *hostis* ends in *i*. How this is, from his rule of separation of the paradigm, we do not see; and how he explains the *i* in the genitive plural, we can not conceive. We believe the stem can only be found invariably in the third declension by cutting off *um* in the genitive plural, and then we find the "stem" of *urbis* to be *urb*, and the stem of *hostis*, *hosti*, both thus belonging to the same class with the vowel characteristic *i*. With this

as a starting point, we can explain the form of the accusative in *im*, the ablative of neuter in *i*, the neuter in *ia*, and the genitive plural in *ium* by *i* falling out, or forcing out *e* and taking its place. All nouns with the genitive plural in *ium*, whether feminine or neuter, whether they end in *is* or *s*, preceded by a consonant or *x*, belong to the vowel class with the characteristic in *i*.

We notice, also, he gives the accusative plural of *duo* as *duos*, whereas the usual form is *duo*, and should at least be mentioned, as is generally done by grammarians. If either form is omitted it should be *duos*.

The number of new books on history is a happy omen of increasing interest in that study. It would be idle to speak of its importance. In this country we are rapidly following the example of the English and continental schools in the great attention which they pay to this subject. Colleges are founding professorships of history, and every form of text-book is rapidly appearing.

The *Smaller History of Rome*, by Dr. Smith,⁴ while it is an epitome, is by no means a child's book. It is a clear and simple condensation of the facts connected with the internal and external history of Rome, without any lengthy discussion. It is a bird's-eye view—a history for *beginners*, of whatever age they may be. We believe, indeed, that more advanced classes will learn history much faster and with infinitely greater interest by memorizing such a compendium, to be followed by the teacher extending the subject with lectures and explanations, than by dragging the weary memory through the pages of our larger manuals. Taught by the aid of interesting lectures and illustrations, history is the most fascinating of studies; when taught by simple memorizing it may easily be very tiresome.

Nations, like individuals, have but a limited period of existence; an unwelcome doctrine truly, yet confirmed by history and analogy. Rome, Greece, and Egypt grew from weakness and barbarism to strength and civilization; then died to make way for others advancing. An individual, by attention to the laws of health, may attain to greater age; so a nation, by careful study of the details of civil policy and by avoiding the errors of its predecessors, may prolong its existence. To us, as Americans, in view of the crisis of reorganization, through which this nation is now passing, the question of our future civil policy is especially important. Hence Dr. Draper's work,⁵ resulting from long and accurate investigation, is especially

(3) *PRINCIPIA LATINA*.—Part I. By WM. SMITH, LL.D. Revised by H. DEUBLER, LL.D. New York: Harper & Brothers. 78 cts.

(4) *DR. SMITH'S SMALLER HISTORY OF ROME*. New York: Harper & Brothers. \$1.00.

(5) *THOUGHTS ON THE FUTURE CIVIL POLICY OF AMERICA*. By JOHN WILLIAM DRAPER, M. D., LL. D., Professor of Chemistry and Physiology in the University of New York, etc. New York: Harper & Brothers. Large 12mo, pp. 325. \$2.50.

welcome. Our republic, in its efforts to establish and maintain unity of government within its present limits, must solve many problems of more than ordinary difficulty, if it would be successful. Its most dangerous opponent is climate. This, when hot, and characterized by only slight changes of temperature, produces homogeneity of thought and an indolent disposition; but where the changes are great, it causes industry and intellectual activity. Different climates, therefore, tend to difference in customs and ideas; if the contrast be great, these will necessarily clash. In the United States we find five distinct climates—four at the North, somewhat similar to each other, but entirely unlike the fifth, at the South. Here, then, we have five natural divisions, in each of which peculiar manners obtain. Can these varying elements be harmonized? The problem is indeed complex, yet its solution is simple. *Locomotion*, our railways, canals, and telegraphic lines are to be our bond of union. Dr. Draper firmly believes that had there been a constant stream of Northern travel through the South during the last ten years, our civil war could never have occurred. The vast flow of immigration to our shores, though attended with many advantages, will add difficulties. In society there are three classes: those who see and discuss matters for themselves; those who accept and adopt the opinions of the first; and the peasantry, or those who have no opinions at all. The first class *makes* a nation. Unfortunately we receive few from it, the great majority being from the second and third, which are mostly of uneducated, unthinking people, and therefore measurably retard our development. These must be elevated and absorbed. Education, free and unrestrained, is the agent for their advancement and our protection. But while we see physical agencies exerting so powerful an influence, the political force of mere ideas must not be overlooked. A single pithy sentence may overturn or preserve a nation. The watchword, "There is but one God, and Mohammed is his prophet," filled a race with infatuation, and enabled it to override half the world, conquering nations and overturning established forms of thought and religion. The Jews look forward to a coming Messiah. This hope has led them to resist all allurements, to suffer persecutions, and still to remain a distinct people. We have one all-prevailing idea—the unity of government on this continent. For sake of this we have raised an army and built a navy, which compare favorably with those of Europe; from a purely commercial nation, we have developed into a vast military power, and for four years have expended eight hundred millions of dollars per annum. If, then, mere ideas are at times so pregnant with results, it is the duty of our nation to encourage freedom of thought. We must avoid the intolerance of Europe, must encourage every form of science, and elevate our

standard of education. We regret that our space will not permit us to give the measure of the book. It is wealthy in facts, drawn from every department of science. It is in the highest degree interesting and instructive, and will prove a really valuable addition to the library. Still it is imperfect. It lacks compactness: the illustrations are loosely thrown together in such profusion that at times it is difficult to follow the line of argument. Digressions are too frequent, and detract from the unity of the work. In many places the style is cumbersome, and evinces haste in the preparation. These, however, are only blemishes which, perhaps, might be unnoticed in a work of less sterling merit. The book is beautifully gotten up, and reflects credit upon the publishers.

Thousands of persons have an exalted idea of Robert Browning, as a poet, who have never seen a single line of his poems. They have heard of the "freedom of movement" which characterizes his writings, they have seen the words "strength," "originality," and "word-painting" applied to his poems—but in what way this freedom and originality are shown, they know not; and we suspect that some of the critics who have used these expressions would find it difficult to demonstrate their appropriateness. Any one, however, who wishes to have a specimen of Browning's poetry can now obtain a fair sample at a low price. Nearly sixty of his lyrics have been published in the neat and popular form to which we recently adverted. Although the book¹ comprises only about one hundred pages, it will enable any unbiased, discriminating mind to judge of the pertinency of the eulogiums so lavishly bestowed on the man who, in giving to Elizabeth Barrett Browning her name, did more for the perpetuity of his own than he could ever have effected by his writings.

Mr. Emerson is an eccentric genius, full of good intent, but doomed, we fear, to remain unappreciated. In the tract² which we have just received, he maintains that the duodecimal is much superior to the decimal system, as it is easier to reckon by dozens than by tens. We doubt, however, whether he will succeed in introducing his theory against the influence of the whole scientific world. The tract is exceedingly ingenious, and, like the "Logic of Algebra," by the same author, is worth far more than its price as a mathematical curiosity.

Silliman's Journal for September is interesting. It contains, among others, Experi-

(5) *LYRICS OF LIFE*. By ROBERT BROWNING. With Illustrations by S. Eytling, Jr. Boston: Ticknor & Fields. Small 16mo, pp. 161; 50 cts.

(6) *THE DUODECIMAL SYSTEM*. Addressed to scientific men, business men, and legislators. By Samuel Emerson, A. M. New York: Schermerhorn, Bancroft & Co., pp. 4; 5 cts.

ments with the Ammonium Amalgam; Contributions to the Chemistry of Natural Waters; a continuation of Warren on Volatile Hydrocarbons; and Walling on Gravitation. The magazine has been enlarged to its former size, and the summary of scientific intelligence is therefore more satisfactory. The price per annum is only five dollars, and no conscientious teacher of the sciences can afford to be without it.

A new work on petroleum has a glowing preface, in which the author states that he has entered minutely into the physical formation of the oil region, and calls especial attention to his statistical and financial developments. He assures us that "the facts and figures now given to the public for the first time, together with the modes of taking in . . . knowing Eastern people will tell." If his figures are not more accurate than many of his statements, they will "tell" any thing but the truth, and will not suffice as data on which to risk an investment. While

criticising the "newly extemporized linguists," who speak of "a contributory to Sugar Creek," and desire the "envelopment of the country," he conjectures that Dame Partington has been giving lessons in the oil region, and suggests the idea that "her ladyship has 'oil on the brain.'" But what then shall we say of our author, when, instead of carburetted, he speaks of "carbonetted hydrogen," a specimen of nomenclature suitable for a Partington lexicon; and when he informs us that the people who formerly shipped petroleum on Sunday as well as Saturday, have now "the advantage of a septennial day of rest." If this latter statement is incorrect, if in reality the day for rest and worship occurs oftener than once in seven years, how are we to account for this and similar errors, as when he makes the word Petrolia denote a substance as well as a locality? The only explicatory hypothesis is, that our author has something stronger than oil "on the brain;" or, possibly, that the brain in question exists in a state of preternatural dilution.

The work contains much that will interest many, and comprises statistics and facts which were in part given to the public, by another writer, half a year ago.

G) THE OIL REGIONS OF PENNSYLVANIA. Showing where Petroleum is found; how it is obtained, and at what cost. By WILLIAM WRIGHT. New York: Harper & Brothers. 12mo, pp. 22.

NOTES AND QUERIES.

NOTES.

Ruled Paper.—Before the use of envelopes for letters became general, the fourth page of a sheet of letter-paper was not expected to be written upon, and was appropriately left unruled. But at present the blank page is an annoyance, a defect, and constant reminder of the tyranny of customs and habits. When letter and note papers are ruled at all, the fourth page should not be excepted. If this paragraph finds its way into the columns of the "MONTHLY," and the paper-dealers take the hint, they will certainly profit by it even in a pecuniary sense, and the convenience of letter-writers will be promoted.

PETER PAPYRUS.

Facts for the School-room.—Here are some facts and figures respecting the strength of various materials, which, with a little ingenuity, may be made useful and interesting in the school-room:

Iron, one of the most abundant materials in nature, is the strongest of all known substances. Made into best steel, a rod $\frac{1}{4}$ inch in diameter will sustain 9,000 lbs. before breaking; soft steel, 7,000 lbs.; iron wire, 6,000; bar iron, 4,000; inferior bar iron, 2,000; cast iron, 1,000 to 3,000; copper wire, 3,000; silver, 2,000; gold, 2,500; tin, 300; cast zinc, 160; sheet zinc, 1,000; cast lead,

55; milled lead, 200. Of wood, box and locust, same size, will hold 1,200 lbs.; the toughest ash, 1,000; elm, 800; cedar, white oak, and pitch pine, 600; chestnut and soft maple, 650; poplar, 400. Wood, which will bear a very heavy weight for a minute or two, will break with two-thirds the force acting a long time. A rod of iron is about ten times as strong as a hempen cord. A rope an inch in diameter will bear about two and a-half tons, but in practice it is not safe to subject it to a strain of more than about one ton. Half an inch in diameter, the strength will be one-quarter as much; a quarter of an inch, one-sixteenth as much, and so on.

P. M. J.

QUERIES.

Geography.—Will some of the readers of the "MONTHLY" answer these questions:

Was the division of Virginia a permanent division, or only a measure designed for war-times? If permanent, what is the capital of West Virginia? Is Frederic or Annapolis the capital of Maryland? The New York "Herald," in 1862, inserted in its columns the change of the capital from the latter to the former place, but I have never seen the change noted in any of the recent geographic publications.

K. E. P.

REPLIES.

Petroleum.—Does the theory that petroleum is the product of the destructive distillation of coal by means of the earth's internal heat, accord with the opinion expressed in the "MONTHLY" articles on petroleum? And is this the true explanation? PENCHARD.

[The articles referred to did not assume to offer any theory, but to make known some of the ideas already advanced. The latest view is the exact converse of the one stated. It is urged that instead of petroleum being formed from coal, coal was formed from petroleum; that the materials from which our coal-beds were formed were converted into oils, which, losing their oxygen and nearly all their hydrogen, gradually became solid.—J. W. H. C.]

Charred Wood.—My scholars are interested in the charring of the posts for our new fence, and want to know whether the principle is extensively applied in the arts. Can you answer and give any facts relating to the subject? HEWITT.

[The charring of wood for the purpose of preserving it consists in the forming of an outer surface of carbon impregnated with the empyreumatic oils and creosote resulting from the carbonization. It has long been resorted to, but not on an extensive scale. A process is about to be introduced

into the dock-yards of France, in which a blow-pipe will be used, throwing a gas-flame upon every part of the wood as required for proper torrefaction.—J. W. H. C.]

Lightning-Spectrum.—Has the spectrum produced by the lightning-flash been studied or received any attention? E. C. STILES.

[It has been examined by the Abbé Laborde. The lines seen are of a dull white or lead color—one always more distinct than the others. Sometimes only one is seen.—J. W. H. C.]

Amount of Precious Metals.—My pupils were so much interested in the "Object Lesson on Gold" in the "MONTHLY," that they want to know the quantity of gold in the world. Can Notes and Queries tell, and of silver? L. WALLACE.

[Approximative estimates only can be made. At the beginning of the sixteenth century the amount of the precious metals was only \$200,000,000. American productions had in 1848 increased this to \$3,915,000,000. According to Mr. Roswag's work, "*Les Métaux Précieux*," the amount of precious metals was, during the following ten years, increased by \$434,000,000, silver; \$1,200,000,000 gold. Since 1856 the total annual increase of silver has been about \$50,000,000, silver; gold, \$100,000,000.—J. W. H. C.]

SCIENCE AND THE ARTS.

— A Dr. Boisson has discovered that a vapor bath at 93 degrees F., gradually reduced, is a certain cure for hydrophobia. The bath is to be taken *à la Russe* for seven days. He affirms that he has thus treated eighty patients, some of the cases very bad, and never lost one.

— The waters of the Lake of Constance have been so low as to allow important researches to be made concerning the locustrian habitations. The objects chiefly found were corn, kitchen utensils, woven fabrics, and plated articles. Every thing taken up was deposited in the Wessemberg Museum of the town.

— A French printer has succeeded in making gas for lighting with the refuse of apples and pears used in making cider and perry. This gas is said to be superior to that made from coal, as it emits neither smoke nor smell.

— A machine was exhibited at the recent *soirée* of the Royal Society, London, by which all the particulars as to the speed and stoppages of railway trains are registered

and recorded on a sheet of paper, in the form of a diagram, giving with the greatest precision all the information wanted.

— A few caverns, near Beyruth, were recently explored in the hope of finding antediluvian remains in them, and, indeed, several flint instruments were dug up as evidence of the "age of stone" in these parts. The expedition visited Masada, the last stronghold of the Jews, of which Josephus relates, that, after the fall of Jerusalem, 800 men retreated to this spot and held out against the Romans as long as there were any; but that, finding themselves unable to resist any longer, they appointed ten of their number to be the executioners of their comrades, and that these, after performing this horrible task, slew each other, so that only two women and a few children remained to tell the tale. This stronghold is a rock, accessible only by two narrow winding paths, leading over frightful precipices. There are still some ruins visible at Masada, besides the trenches of the Roman general, Silva, who besieged the place.

— Chalil Bey, the Turkish ambassador

has presented to the Emperor of Russia, for the Museum of the Ermitage, a magnificent collection of antiquities discovered in excavations in Egypt, and among others fifteen figures in bronze inlaid with gold and silver, a statue of an Osiris in a standing posture, and another in a sitting one; also a cat, consecrated to Osiris, and several statuettes of kings, of which three belong to the period of the Ethiopian pharaohs. There are also some remarkable pieces of the Ptolemean period, and among them a bust of Serapis and the bust of a queen with the attributes of Isis.

— In some of the mines of San Domingo, the Romans dug draining galleries nearly three miles in length, but in some places the water was raised by wheels to carry it over rocks that crossed the drift. Eight of these wheels have recently been discovered by the miners who are now working the same old mines. The wheels are made of wood, the arms and felloes of pine, and the axle and its support of oak, the fabric being remarkable for the lightness of its construction. It is supposed that these wheels can not be less than 1,450 years old, and the wood is in a perfect state of preservation, owing to its immersion in water charged with the salts of copper and iron. From their position and construction the wheels are presumed to have been worked as tread-mills by men standing with naked feet upon one side. The water was raised by one wheel into a basin, from which it was elevated another stage by the second wheel, and so on for eight stages.

— A company engaged recently in boring for oil in Wirt County, West Virginia, struck a rich vein of antimony, a rare and expensive metal, in great demand for type-casting. The sum of \$350 per ton was at once offered for all the discoverers could supply.

— The Cochinchinese possess a secret for protecting wooden vessels against the depredations of the teredo, an insect which does immense damage to ships and timber on the shores of the Black Sea, the Mediterranean, the Asiatic, and other waters. The Cochinchinese refuse to tell the secret; but Lieutenant Mariot, by diligent inquiry, ascertained that it consists in the employment of a mixture of resin and oil obtained from trees in the country. He further ascertained that it is so effective as a preservative, that junks—so old that the precise year of their construction is forgotten—are, though constantly plying in waters in which the insect abounds, still sound and strong. He has communicated his discovery to the French Emperor, who has manifested great interest in it; and, at his majesty's request, Lieutenant Mariot is to return to China to make further inquiries, and to bring back some of the wood steeped in the mixture.

— The manufactory of St. Gobain, Aisne, France, has been employed six years in fabricating a lens two feet in thickness, which it has now given to the Observatory of Paris for the large telescope in course of being manufactured, the power of which will exceed that of the most powerful instruments known.

— The railway velocity indicator, invented by Mr. W. A. Brown, of London, when fixed inside a railway carriage, records the speed of the train at all parts of the journey; the journey, the stoppages, the shuntings, and, indeed, all that befalls the train, including the exact time of an accident. The record is a line traced by a pencil on a sheet of paper, moved by clockwork; where the speed varies much and stoppages occur, the line represents a series of curves more or less acute.

— In topographical surveys much use is made of sun signals, flashed from one high elevation to another, fifty or seventy miles apart. In practice some difficulty is experienced in so placing the mirror at the exact angle for catching the sun and transmitting the flash. This difficulty is overcome in the heliotrope invented by Professor W. H. Miller, of London. It is a small parallelogram of thick, silvered glass, from which, at one corner, a portion of the silver, about the extent of a pin's head, has been removed. The observer, looking through this small hole, directs the mirror to the sun, and when he sees an image of the sun reflected on the two angles of the glass under the hole, the mirror is in the true position for flashing the signal.

— Experiments have been made in Paris with an apparatus, invented by M. Galibert, to enable a man to breathe in the midst of deleterious emanations. A quantity of flour of sulphur was set fire to in a cellar, and several persons descended into the sulphureous atmosphere with perfect comfort. Similar experiments have been performed at Versailles, and latterly in one of the cellars of the Société d'Encouragement. When the air in the reservoir has become foul by the action of breathing, fresh air may be easily introduced; the knapsack, which is of metal, has a tin bottom, but the lid consists of a skin or leather bag. To drive out the foul air this leather bag has only to be pressed down, and to fill the space with fresh air the bag is pulled up again.

— While we throw aside as useless our broken or cracked kitchen utensils, the Chinese dexterously mend the holes and cracks. The tinker scrapes the surface of the broken vessel clean; he then fuses a portion of cast-iron in a crucible the size of a thimble in a furnace about as large as the lower half of a common tumbler. The iron, when melted, is dropped on a piece of felt covered with ashes. It is pressed inside the vessel against

the hole to be filled up, and as it exudes on the other side it is struck with a roll of felt also covered with ashes; the new and old iron adhere, and when the superfluous metal is removed the operation is complete.

— The action of sea-water upon cast-iron is curious, converting it at length into a gray porous mass, that grows rapidly hot upon exposure to the air. In 1740, some iron guns, that went down with the Spanish Armada near Mull, in Scotland, were fished up. On scraping them they soon became so

hot that they could not be touched. In all probability this gray porous mass was simply the carbon of cast-iron, the metal having been converted into chloride of iron by the sea-water and so removed, since these very guns, to which Dr. Perry refers, were, when fished up, so light that, although 82-pounders, one man could easily lift them.

— A French chemist proposes to prevent the oxidation of iron and steel by the forced incorporation of volatile metals having little affinity for oxygen.

MISCELLANY.

— The estimates for day scholars in elementary schools in England, for the present financial year, is 897,513, at 9s. 8d. each.

— A human mummy has been found imbedded in guano on the coast of Africa. Under the microscope crystals of ammoniacal salts are visible, to which substance the preservation is doubtless to be attributed.

— The last joke at the expense of the French Society for the Protection of Animals is to the following effect: A countryman, armed with an immense club, presents himself before the president of the society, and claims the first prize. He is asked to describe the act of humanity on which he founds his claim. "I saved the life of a wolf," replied the countryman; "I might easily have killed him with this bludgeon," and he swung his weapon in the air to the intense discomfort of the president. "But where was this wolf?" inquires the latter; "what had he done to you?" "He had just devoured my wife," was the reply. The president reflects an instant, and then says: "My friend, I am of the opinion that you have been sufficiently rewarded."

— There are more marriages in Scotland on the last day of the year than in any week of the year, excepting the week in which that day occurs. By the late returns the marriages in the eight principal towns would average some twenty-five a day—that is to say, a work-day, for marrying is one of the things not to be done in Scotland on Sunday—but the registrar-general states that in fact there are more than four hundred marriages in those towns on the 31st of December.

— For three years in succession the voters of his city have honored Ex-President Buchanan with their suffrages as constable to the extent of an election; and thrice, under the law requiring it, has he gone to the proper authorities and made oath that his election was without his wish, knowledge, or procurement, and that he did not desire to hold the office.

— "Sire, one word," said a soldier one day to Frederick the Great, when presenting to him a petition for the brevet of lieutenant. "If you say two," answered the king, "I will have you hanged." "Sign," replied the soldier. The king stared, whistled, and signed.

— Strikes being in fashion in France, the bachelors of Marseilles, to the number of four thousand, between the ages of twenty and thirty, have held a meeting and entered into an agreement not to ask any young woman in marriage until a complete change shall have taken place in the manner of living, and particularly in the dress of the fairer sex. The young men insist on greater simplicity in every respect, and a return to the more modest habits of a century or two ago.

— A lady asked her gardener why the weeds always outgrew and covered up the flowers. "Madam," he answered, "the soil is mother of the weeds, but only stepmother of the flowers."

— In the midst of a stormy discussion a gentleman rose to settle the dispute. Waving his hands majestically over the excited disputants, he began: "Gentlemen, all I want is common sense—" "Exactly," Jerrold interrupted, "that is precisely what you *do* want!" The discussion was lost in a burst of laughter.

— "I gave the fellow a shilling," said Sir Walter Scott, on some occasion when sixpence was the fee. "Remember you owe me sixpence, Pat." "May your honor live till I pay you!"

— A French chemist asserts that if tea be ground like coffee before hot water is put upon it, it will yield double the amount of exhilarating qualities.

— Photographic pictures cannot be relied upon as permanent. At a recent sale in England, forty continental views, which had cost the artist \$100, sold for twenty-five cents—all traces of pictorial representation having faded away.

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DISEASES INCIDENT TO THE TEACHER'S PROFESSION.

THE announcement was made in the prospectus of the present volume of the EDUCATIONAL MONTHLY, that a paper would be prepared, "upon the diseases peculiar to Teachers, because of their professional pursuits, and the means of prevention." In presenting this subject, it should be stated that, strictly speaking, there are no diseases *peculiar* to teachers; those to which they are most subject, being almost equally prevalent among the members of the clerical and legal professions, public lecturers, and singers.

Teaching has of late years advanced to the dignity of a profession; yet even now a comparatively small number of those who engage in teaching adopt it as a permanent profession; by far the larger proportion regarding it as a means of temporary employment, by which they may secure money enough to prosecute their studies for some other pursuit, to which they purpose to devote their lives. The number of professional teachers is, we are glad to know, rapidly increasing; but in the past, it has been difficult to distinguish in any tables of vital statistics, between those who were permanently, and those temporarily engaged in it.

Still, from what facts can be gleaned from the tables of vital statistics in England and this country, we are forced to the conclusion, that the teacher's profession is not unfavorable to longevity. The eminent English statistician, Thackrah, in his work on "The Effects of the Arts, Trades, and Professions, and of Civic States and Habits of Living on Health and Longevity" (London, 1832), though classing teachers with

other professional men, testifies to their general healthfulness and longevity, except where they indulged in excesses of the table. M. Brunaud, a French statistician, took, at hazard, one hundred and fifty savans, half from the Academy of Belles-Lettres, and half from the Academy of Sciences, and nearly all engaged in active teaching, through the greater part of their adult lives, and found that the sum of years lived by them was 10,511, or an average of above 70 years each.

The vital statistics of Massachusetts, compiled by Dr. Edward Jarvis, show that in the five years 1853-57, the number of annual deaths to 100 living teachers was 1.39; while that of clergymen, everywhere as a class noted for longevity, was 1.25; of the legal profession, 2.01; of the medical profession, 2.08; and of agriculturists, 1.76. The mean age at death of those who had died during the fifteen years 1848-58, a slight fraction under thirty-nine years, does not militate against this view, although it may seem to do so; for in Massachusetts, as well as elsewhere in this country, the great majority of those engaged in teaching are under the age of forty-five; very few, comparatively, remaining in the profession beyond that age, except college presidents and professors, who would generally be reckoned among the clergymen. Of course, the reputed deaths of teachers would occur only among those actively engaged in teaching; and their mean age at death would be necessarily lower than in professions which were not generally abandoned in middle life.

Isolated cases of longevity are not of great value, as indicating the general healthfulness of a profession; yet when such cases are very numerous, as in the classes of retired military and naval officers and clergymen in Great Britain, they show at least that that profession is not incompatible with health and protracted life. These examples are abundant in the teacher's profession. The venerable Bishop Comenius, notwithstanding bitter persecutions and numerous perils by sea and land, was eighty years of age at his death. Pestalozzi, notwithstanding the many vicissitudes of his early life, passed his eightieth birthday; Fellenberg and Jacotot, active teachers till their death, both survived their seventieth year; and Father Girard, an eminent French teacher, whose system, a modified Pestalozzianism, is largely in vogue in France, died in 1850, after a life of active teaching, at the age of eighty-five. Oberlin was eighty-six, at his death; Joseph Lancaster, above seventy. Von Raumer, one of Pestalozzi's most eminent pupils and successors, died the last summer at the age of eighty-three. That our own country is not behind the countries of Europe, in the venerable age of its teachers, a few examples will prove. Ezekiel Cheever, the paragon of Boston schoolmasters, died at the age of ninety-three. The venerable Doctor Dow, who for seventy years trained the youth of New London, Connecticut, was past ninety when he relinquished teaching. The venerable Doctor Eliphalet Nott, though approaching his hundredth year, still retains the presidency of Union College; and Doctor Jeremiah Day, though, some years since, he retired from the active duties of the presidency of Yale, still lives, a hale old man, though in his ninety-fourth year. We might name also as among the teachers covered alike with years and honor, who have recently departed, Professor Benjamin Silliman, whose death occurred in his eighty-fifth year, after more than fifty years of active teaching; President Allen, whose intellectual vigor had hardly abated at the age of ninety; the accomplished Quincy, who, though in his later years he had withdrawn from the active life of the teacher, survived in health and vigor to be ninety-

two. The eminent scholar and teacher so recently departed, Doctor Francis Wayland, died at the age of sixty-nine, not from disease incurred in teaching, but from extraordinary literary exertion, while suffering from a cold.

With such evidence before us, we can not doubt that the teacher's career is compatible with longevity and good health.

This might, indeed, be expected. The conditions most favorable to health and long life, are: a systematic, regular, well-ordered life, with such employment as shall occupy, without overtasking, the brain; regular exercise in the open air, and sufficient excitement to the ambition or emulation of the subject, to prevent him from sinking into an apathetic condition. These conditions meet more fully in the teacher's profession, than in any other, with the possible exceptions, already noticed, of the clergymen of the Church of England, and the half-pay officers of higher grades in the British army and navy. And the writer is informed by eminent life assurers, that, ordinarily, a teacher is considered a better risk than a member of any other profession.

But while this view of the healthfulness of the teacher's profession will probably be new to some of those engaged in teaching, and may serve to encourage others to enter upon a teacher's life, it would be folly to suppose that teachers were exempt from sickness, or "the ills which flesh is heir to." Some enter upon their profession with an enfeebled body, or an hereditary predisposition to disease; and though, in some cases, this may be aggravated by their mode of life and duties, it would be manifestly unfair to attribute to the profession, that disease which existed, either openly or secretly, before their entrance upon it.

A very general impression prevails that teaching induces a tendency to brain disease, and especially to insanity; but there is good reason for believing the impression an erroneous one. On this subject, statistics are the best authority. In the Pennsylvania Hospital for the Insane, one of the largest and best-managed institutions of its kind in the world, there had been 2,292 male patients admitted in the

24 years, 1841-1864. Of these, only 36 were teachers, or 1.57 per cent.; the number of clergymen admitted during the same time was 25, or 1.09 per cent.; the number of physicians was 45, or about 2 per cent., and of lawyers 41, or 1.79 per cent. The institution being situated in the confines of Philadelphia, and by far the larger part of its patients coming from that city and its immediate vicinity, it is probable that the number of teachers in the district from which the patients were drawn, exceeded that of clergymen, and was fully equal to that of either lawyers or physicians. The number of male students admitted during the same time was 77, of whom 29 were students of medicine, law, or divinity. There were few of the trades or occupations, employing any considerable number of persons, which did not give a larger number of patients, although, from the comparatively high price of board, the number of laboring men or mechanics in its wards would be less than in the city or State institutions.

Acute brain disease, as inflammation of the brain or its enveloping membranes, a rare disease except in persons of irregular habits, is particularly rare among teachers; nor is apoplexy or paralysis common among them, though the latter is more frequent than the former. Paralysis is, however, in the larger number of cases, an hereditary disease, and is not traceable to any cause connected with the teacher's profession.

Nervous affections are to some extent incident to the profession, and especially to the female members of it. Some of these, the result of an unaccustomed weight of care and anxiety, acting upon an impressible and excitable temperament, are not dangerous in themselves, and after a short experience will pass away, not to return again for months or perhaps years. A difficult case of discipline, the anxiety concerning an approaching examination, or a disappointment in the performance of some model scholar on a day of public exercises, has often resulted in a racking headache and a nervous prostration which was materially relieved by a "heartily crying spell," but left its traces in sunken eyes and oppressive languor, the next day;

but the disease is not serious or generally dangerous, and the fair invalid usually regains her vivacity in a day or two.

More serious, because more enduring and less amenable to treatment, are the various forms of neuralgic suffering, sometimes appearing in the form of what the French have well named *tic-douloureux*, affecting the nerves of the fifth pair, and running along the jaw, ascending to the temple, or extending in sharply defined lines along the scalp, occasionally inflicting terrible agony in the region of the ear; at other times affecting the muscles of the chest or limbs, in that form now designated as rheumatism; and everywhere causing a sharp, wearisome, unendurable pain, which may leave the part affected in five minutes, never to return, or may come on in regular or irregular paroxysms for months and even years.

The presence of this painful affection indicates previous disorder of the system, and though in rare cases the result of some local irritation of the nerves, such as the presence of decayed teeth, or of some spiculæ of bone, or other irritant pressing upon a nerve, it is far oftener the consequence of a reduced state of the system, the result of over-exertion, or prostration from climatic or other influences. It need not be said that the sufferer from neuralgia is not in a fit condition to teach; but if, as sometimes may be the case, the labor which has become a most intolerable burden, must be continued for a time, resort should be had to tonics, and especially to some of the preparations of iron.

A more frequent class of diseases incident to the teacher's profession, is the legion of affections of the air passages—catarrhal, buccal, laryngeal, bronchial, and pharyngeal. In common with members of the clerical and legal professions, public lecturers, public singers, and large numbers of persons of no profession, enlarged tonsils and uvula, catarrh, sore throat (the common name of a half-dozen distinct diseases), occasionally loss of voice, and some bleeding from the throat, are common diseases among the teachers of our cities and large towns. There seems to be satisfactory evidence that these affections are on the increase, not only among teachers, but

among the other classes we have named. Popular opinion assigns the sudden changes in our climate as the cause of them; but popular opinion in this, as in so many other cases, is in the wrong. The climatic changes were as numerous and sudden thirty or forty years ago as now, but these diseases did not then prevail to any thing like the same extent. The secret of the prevalence of throat affections and other diseases of the air passages at the present day, is *impure air*, acting as a poison upon the air passages when these tissues are in the highest state of excitement. In former times, our school-houses were not by any means air-tight; the air came whistling up through the floor, found its way in around the window-sashes, and very often, too, through the broken panes of glass; and when the door was opened, Great Gust walked, or rather rushed in, to the sad confusion, often, of writing-books and paper. Now, our school-houses are of brick or stone, the floors and windows made tight (the latter often by the use of some patent weather-strip); and into this close room is forced hot air, deprived of all its moisture by passing over the red-hot flues of a furnace; or still worse, the air of the room is made intolerable by the presence of a great, red-hot cast-iron stove in the room. Ventilation is very inadequate, a small hole at the top of the room, or perhaps two, being the only outlets for the mass of carbonic acid gas, and other irrespirable gases, which fill the room, and which being generally heavier than atmospheric air, refuse to rise and pass out of these holes.

Teachers and scholars, intent on progress in study, breathe this foul air, till the head throbs with pain, the eyes burn and smart, the throat feels husky and parched, and every effort at study or teaching, calling the blood more fully to the brain and chest, only aggravates these sensations; and the same state of things recurring from day to day, the throat, lungs, and nostrils become permanently disordered, and ulcerations and other forms of irritation of the air-passages are the result. This class of diseases, from their greater exposure to them, are more prevalent among the female than the male teachers

of our schools; and it is perfectly within bounds to say, that the health of some thousands of our female teachers is permanently impaired, and the lives of hundreds sacrificed to the ignorance and stupidity of those who build our school-houses; and when we consider that the children who attend these schools suffer to an almost equal extent, the injurious effects of this ignorance are almost incalculable.

We can say but little in regard to the means of prevention of these diseases, because in most instances the teacher does not realize the existence of danger until his health is seriously impaired. We may recommend, however, that the teacher should exert all his or her influence to have the ventilation of the school-room improved, where it is defective; that in default of the existence of architectural means of ventilation, the windows should be dropped from the top, water placed where it may slowly evaporate from the heat of the furnace or stove, and the air of the room be thoroughly changed by opening of the windows, at recess, as well as in the intervals, if there are such, as there should be, between the morning and afternoon sessions of the school. While due regard should be had to wearing seasonable clothing, we cannot recommend the use of heavy furs, neckerchiefs of merino or other woollen material, respirators, or any other nonsense of the sort, to protect the throat and chest from cold. All such measures, by retaining the insensible transpiration of the skin, or obstructing the free respiration of pure air, do more hurt than good. The throat should be free from any pressure, and have as little clothing upon it as is consistent with moderate comfort. Pure air, and plenty of it, is the best restorative to these unhealthy conditions of the air-passages. It will be for the advantage of the teachers to have, at all times, a considerable walk to and from the school-room. The lungs and respiratory apparatus will thereby be invigorated, and such open-air exercise is worth infinitely more to his or her health, than the movements necessitated by the exercises of the school-room. The diet of the teacher should be regulated, at least in quantity.

The almost universal tendency is to eat too much, and of food which does not readily digest; and so intimate is the sympathy between the stomach and brain that the activity of the one inevitably involves the excitement of the other; and the attempt to keep both actively employed at the same time, imperils the health. For this reason, the food taken by the teacher during the noon recess should be simple, easily digestible, and very moderate in quantity; and a full meal should not be taken, until the care and mental anxiety and disquietude of the day are laid aside.

This leads us to speak of indigestion, or dyspepsia, which, though by no means peculiar to teachers, is not an infrequent disorder among them. This is invariably the result of errors in diet, and want of sufficient open-air exercise. The errors of diet may be in one direction or another: either from a diet too meager and scanty, or too exclusively vegetable; or from an excess in quantity, and consisting of too much carbonaceous food, fats, butter in excess, etc.; or too highly seasoned food. Often, too, the food is taken with too little mastication, and when the mind is preoccupied with some difficult problem, or disquieted by some carking care. Food taken under such circumstances, will not digest, and will soon impair the powers of the stomach.

Still, we cannot caution the teacher too strongly, especially if inclined to physiological studies, or infected with any dietetic theory, against watching too closely the effect of any article of food on his stomach, or considering constantly whether it is not possible that this article or that may affect his health. The stomach is an admirable servant, but it will not endure watching; and if its action be constantly noticed, it will very soon be found that that action will become abnormal. Blessed, indeed, is that teacher who is never made conscious, by any sensations of discomfort, that he possesses a stomach.

Affections of the liver, such as enlargement, torpor, obstructions of the gall-duct, or of the portal circulation, hemorrhoids, etc., are not infrequent among teachers, as well as other persons engaged in literary pursuits, and those passing an indoor and

sedentary life. These are to be prevented, or relieved, by frequent bathing and friction, especially in the region of the liver; by regulation of the bowels; by diet; the wearing of flannel or woollen under-clothing next the skin all the year round, and by vigorous and uniform exercise.

Affections of the heart, except that class which do not come fairly within the physician's province, are not common among teachers. Where they occur, they are usually either hereditary, or induced by rheumatism or a sedentary life. In either case, the mischief is accomplished before prevention can have the opportunity of warding it off. There are, however, simulated affections of the heart, such as palpitation, severe pain in the region of the heart, irregularity of pulse, and apparent cessation of its action for one or two strokes, which are really only disorders of the nervous system, the result of a low grade of action.

Rheumatism and its allied diseases are not so common among teachers now, as they were thirty or forty years since. These diseases are dependent, to a very considerable extent, upon atmospheric causes, though the torpid condition of the liver has often considerable to do with them. The use of flannel under-clothing for the limbs is one of the best preventives, as "patience and flannel" form, perhaps, the surest cure. Frequent bathing, in warm or cold baths, the capacity of the subject for speedy reaction being the guide as to which shall be chosen, will be found a powerful adjuvant to the maintenance of sound health.

But we must close as we began, by insisting that teaching is, in itself, beyond most others, a healthful profession; that if untainted by hereditary infirmities, the teacher using sufficient open-air exercise, and a well-regulated diet, may reasonably hope to attain to as venerable an age as the worthies whom we have enumerated. With better ventilated school-rooms, a simple but healthful diet, and vigorous and regular exercise, the coming generation may see venerable white-haired patriarchs, and equally venerable matrons, the teachers of more than half a century's experience.

PHYSICAL ACTIVITIES.

I.—"THE INDIAN CLUB-RACE."

WHILE Physical Activities serve as preventives or curatives of diseases, their primary object is rather to secure a thorough and symmetrical physical development—beauty of form, flexibility, poise, grace, ease, rapidity of muscular action, and a general diffusion of muscular vigor. Ordinary games and field-sports can be relied upon no more to secure these desirable results than miscellaneous reading to insure the highest and best mental development. Gymnastics afford the only muscular exercise which is impartial, comprehensive, and sufficient—which is available for all ages, at all seasons, and in all places.

While gymnastic exercises are the only universal panacea—the only means of insuring a healthful and harmonious organization—the most acceptable oblation for the shrine of Apollo—the god of health can only be propitiated by an unconscious worship. The exercises must be insulated, removed as far as possible from all care, all brain-work, all consciousness of consumption, gout, dyspepsia, and other "ills that flesh is heir to." Surround them with the most beautiful creations of nature and of art. Let music contribute her choicest treasures. Introduce the social element to the fullest extent, by enabling both sexes to participate. Thus only can we secure the best, the highest, the most desirable result.

The "Indian Club-race" is a most exciting, enjoyable, and beneficial gymnastic game. It is as well adapted to the capacity of the uninitiated as to the experienced gymnast. It yields a very healthy exercise, bringing into play nearly all the members of the human body. It enforces a full expansion of the chest, secures quiet and deep breathing, and will enable one to make severe and continued effort without distress or exhaustion.

This game may be used under cover, as well as in the open air. Hence, in this unpleasant part of the year, when all are indoors, more than in summer, we deem

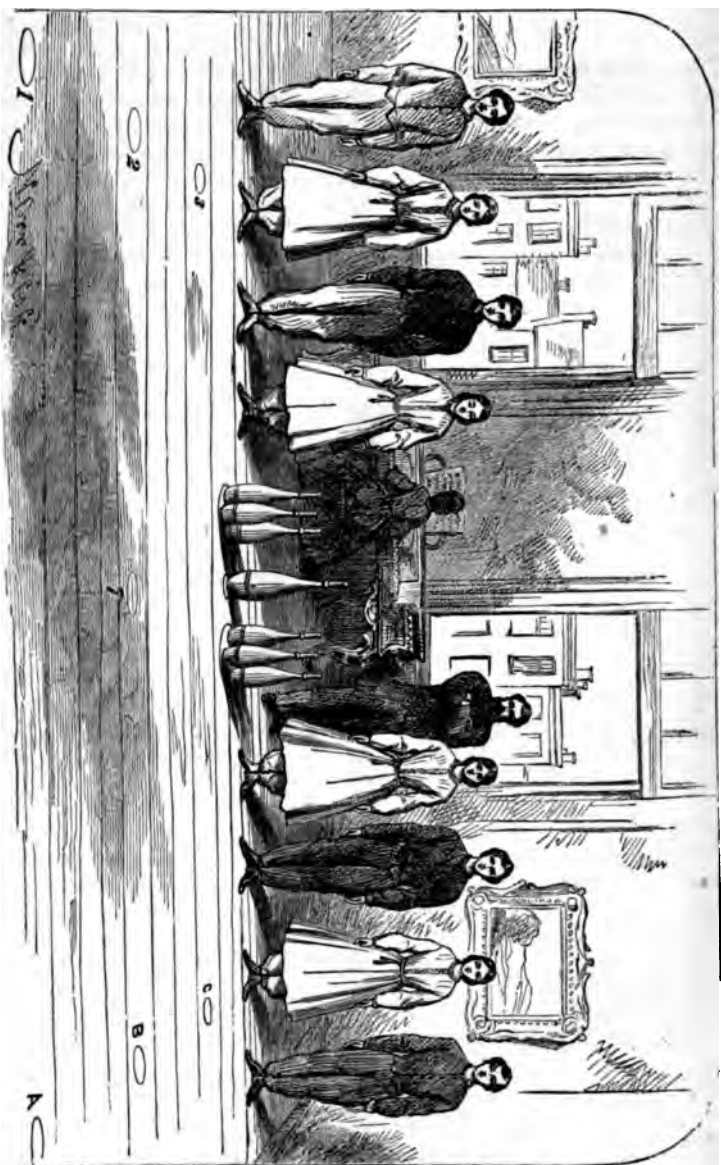
it especially appropriate to introduce an illustration and description of this game.

"The Indian Club-race" is one of the most spirited and efficacious games ever devised. Preparatory to the contest, mark the floor with standings for the clubs, as shown at A, B, C; 1, 2, 3; and 7, in the FRONTSPIECE, the seven clubs in the three circles at the end of the room forming the goal at which the race begins and ends. The standings for the clubs on each side of the room should be at least fifteen feet apart, if possible; twice that distance is not too far, if the room permits.

"The instructor will appoint two leaders, who will choose sides; or the students will number by ones and twos, in the usual military manner, the ones forming the first division, and the twos the second. At the word of command, the two divisions will take their positions as shown in the cut, the leaders standing nearest the clubs. The instructor will count, *One, Two—THREE*, or three chords will be struck on the piano, when each leader will leap to the nearest club, and, *first passing to the side of the room and running over the standings*, set it at 1, or at A. He who first distributes *three* clubs and stands the *seventh* in the center of the room at 7, counts *two* in the game for his side. The whole number of the game is *ten*.

"When the leaders first leave the ranks, the remaining students change their standings, so as to leave the places furthest from the goal vacant for those who are running. Immediately after the clubs are distributed, the signal will be given, and those occupying the standings of the leaders will instantly proceed to gather the clubs, first taking those at 3 and C. He who first gathers *three* clubs, and places the *seventh* in its original position, wins *two* for his side. *One*, however, will be deducted for each club that fails to stand, either in the distribution or the collection. Thus continue, distributing and gathering the clubs, until the game is decided."*

* Watson's Hand-book of Calisthenics and Gymnastics, from which is also borrowed the beautiful cut which illustrates this game.



THE INDIAN CLUB RACE—PAGE 303.

THE JOLLY OLD PEDAGOGUE.

I.

'Twas a jolly old pedagogue, long ago,
 Tall, and slender, and sallow, and dry;
 His form was bent and his gait was slow,
 And his long, thin hair was white as snow,
 But a wonderful twinkle shone in his
 eye;
 And he sang every night as he went to bed,
 "Let us be happy down here below;
 The living should live, though the dead be
 dead,"
 Said the jolly old pedagogue, long ago.

II.

He taught the scholars the rule of three,
 Reading and writing, and history too;
 He took the little ones on his knee,
 For a kind old heart in his breast had he,
 And the wants of the littlest child he
 knew.
 "Learn while you're young," he often said,
 "There is much to enjoy down here
 below;
 Life for the living, and rest for the dead!"
 Said the jolly old pedagogue, long ago.

III.

With stupidest boys, he was kind and cool,
 Speaking only in gentlest tones;
 The rod was scarcely known in his school—
 Whipping to him was a barbarous rule,
 And too hard work for his poor old
 bones;
 Besides it was painful, he sometimes said;
 "We should make life pleasant down
 here below,
 The living need charity more than the
 dead,"
 Said the jolly old pedagogue, long ago.

IV.

He lived in the house by the hawthorn
 lane,
 With roses and woodbine over the door;
 His rooms were quiet, and neat, and plain,
 But a spirit of comfort there held reign,
 And made him forget he was old and
 poor.
 "I need so little," he often said;
 "And my friends and relatives here
 below
 Won't litigate over me when I am dead,"
 Said the jolly old pedagogue, long ago.

V.

But the pleasantest times that he had, of
 all,
 Were the sociable hours he used to pass,
 With his chair tipped back to a neighbor's
 wall,
 Making an unceremonious call,
 Over a pipe and a friendly glass:
 This was the finest pleasure, he said,
 Of the many he tasted here below.
 "Who has no cronies had better be dead,"
 Said the jolly old pedagogue, long ago.

VI.

The jolly old pedagogue's wrinkled face
 Melted all over in sunshiny smiles;
 He stirred his glass with an old-school
 grace,
 Chuckled, and sipped, and prattled apace,
 Till the house grew merry from cellar to
 tiles.
 "I'm a pretty old man," he gently said,
 "I've lingered a long time here below;
 But my heart is fresh, if my youth is fled!"
 Said the jolly old pedagogue, long ago.

VII.

He smoked his pipe in the balmy air,
 Every night when the sun went down;
 While the soft wind played in his silvery
 hair,
 Leaving its tenderest kisses there,
 On the jolly old pedagogue's jolly old
 crown;
 And, feeling the kisses, he smiled, and said:
 "'Twas a glorious world down here
 below;
 Why wait for happiness till we are dead?"
 Said this jolly old pedagogue, long ago.

VIII.

He sat at his door one midsummer night,
 After the sun had sunk in the west,
 And the lingering beams of golden light
 Made his kindly old face look warm and
 bright,
 While the odoriferous night-winds whis-
 pered, "Rest!"
 Gently—gently he bowed his head—
 There were angels waiting for him, I
 know;
 He was sure of his happiness, living or dead
 This jolly old pedagogue, long ago!

HINTS ABOUT DISCOUNT.

ARITHMETICS generally omit some valuable processes of computation, which are both practical in their character, and useful as a means of mental development. Well-known treatises may be searched in vain for a method of calculating true discount, *directly* from the data commonly given—viz., the *debt* and *rate* of discount, and time to run.

The question proposed is, "What part of the debt, or face of the note, is the discount?" By the usual definitions of true discount, it is equal to the interest of the present worth for the given time.

By algebraic analysis, we can readily deduce a general rule for the case which we are considering. For the reason just now stated, we shall make our calculations, with the present worth as a basis.

Let a represent the present worth of *any* sum, and b the rate of discount for the given time. Then $\frac{ab}{100}$ will be the discount of the debt. Now the sum of the discount and present worth, equals the debt; or, $a + \frac{ab}{100}$ equals the debt. And the discount is such a part of the debt as arises from dividing the discount by the debt; that is, $\frac{ab}{100} \div \left(a + \frac{ab}{100}\right)$; or by reduction, $\frac{ab}{100} \times \frac{100}{100a + ab}$, or $\frac{b}{100 + b}$.

Hence, to find the discount—debt, rate of discount, and time being given:

Make the rate of discount for the given time the numerator of a fraction, and $100 +$ this rate, the denominator, and multiply the debt by the fraction.

Thus, What is the discount of \$105, due in 6 months, at 10 per cent. per annum? 10 per cent. per annum gives 5 per cent. for 6 months.

Applying our formula, we have $\frac{5}{105}$, or $\frac{1}{21}$ of \$105 = \$5 = the discount.

Proof.—\$5 = 5 per cent. of \$100, or the present worth, which corresponds with the fact respecting discount.

This result may be arrived at *inferentially*, by solving several problems by a strictly arithmetical analysis; but the algebraic method is preferable for a *general* result.

Another application of this principle, and more practical still in its use, will be found in calculating the commission for *buying* goods, when the *amount* of expenditure and commission, and the rate of commission, are given.

Multiply the amount by a fraction having for its numerator the rate, and for its denominator $100 +$ the rate, and the result will be the commission.

Perhaps these suggestions have no value in practical business; but they will be of service in a large number of cases, in problems requiring the discount or commission only. They will form a valuable class exercise, and arouse thought and a spirit of investigation in the mind of the pupil. The judicious teacher will be ever on the alert to supply these deficiencies, and to invent problems which will carry the pupil beyond the limits of his lesson; and thus create a spirit of self-reliance in both teacher and pupil.

A popular fallacy respecting *bank* discount may perhaps be corrected here. It is not unusual to hear teachers assert, that under this head our laws permit *banks* to take interest in advance, but deny the same privilege to individuals not operating under a bank charter. The writer recently made this statement at an institute. After the session, a gentleman, whose legal abilities entitle his statements to our consideration, corrected us; declaring that the matter has been repeatedly tested in the courts. He avers, that a long line of decisions have uniformly shown that, although the practice of taking interest in advance is usurious, still the *custom* has made the matter legal, and the courts no longer deny the right to individuals. Legislation must be resorted to, to correct the matter, if any change is made.

THE more schools, the fewer jails.

AN early student, an early shroud.

365 SUGGESTIONS TO ASPIRANTS AFTER LITERARY HONORS.

RE is a wonderful delusion abroad the world, about the golden honors of literary pursuits. The fact that the honor and profits derived from such pursuits are immensely magnified, may be due to some inherent and latent causes of excellence about the profession which "plain people" have never been able to appreciate. Probably these exaggerated notions arise from a certain bias common to humanity, which sets itself in the love of notoriety, and morbid gratification at beholding early cherished ideas committed to the world and spread before the public to be registered, and generally discussed.

Nevertheless, whatever may be the true cause of this prevalent hallucination, its effect may be readily apprehended, by looking at examples of constant recurrence from the concurrent testimony of those whom experience has given a good right to speak, and some reason to be heard, on the subject in question. Those who have been initiated in the mysteries of the tripod, and have tasted the sweets of editorial notoriety, have been unsparing of their advice to amatees. They have forcibly set before the difficulties of the path. They earnestly labored to save others from the falls into which ambition, inexperience, and stubbornness might seduce but all to little purpose. Their warnings are unheeded, their motives are despised. Disappointed hopes, or jealous rivals, have been assigned as the cause of such benignant warnings, in defiance of the amiable philanthropy of these veterans.

Literary ambition is but one of the passions of the day. Is not the world full of delusions and error? This very anxiety of literary effort may be next to the discovery of those sparks of genius which occasionally arise from the fire of blasted hopes. For these experimenting in disaster, there may be no loss, and yet there may be a partial gain. Experience is a hard master, but

testimony is a gentler teacher, whose admonitions may be worth heeding.

Therefore, to the literary apprentice we would say, the first requisite is preparation. It is impossible to attain even mediocrity as a writer, without the advantage of education. Whether this be obtained in the fortuitous circumstances of early life, or acquired by the later efforts of manly resolution, does not materially affect the issue, except as a question of time. Education must be obtained sooner or later. A knowledge of the true nature and adaptation of language is indispensable as a means for the expression of ideas. The study of good authors is necessary, not for servile imitation, but for the true comprehension of what "style" is, and for the formation of an individual and expressive idiom.

It is the fashion, in a utilitarian age, to decry and undervalue classic writings and the "dead languages," much to the violation of correct taste, and the detriment of a pure, expressive, and concise style. We do not contend that the study of Latin and Greek is necessary for every avocation of life. We are not prepared to say that the votary of mechanical science may not regard those "remnants of a barbarous age" with as much contempt as he can spare from the heads of empirical rivals in his own profession. But we do assert, that for the man who devotes himself to letters, whose business is with ideal truth, and whose study ought to be how best to impart it to others, a knowledge of the Latin and Greek, as the foundations of the technical and philosophical portions of our own language, is absolutely necessary.

The next requisites are industry, perseverance, patience. Be content to progress, and yearn not for the stand which is only to be won by long and arduous effort. *Festina lente*, is a maxim applicable in every pursuit, but in none so necessary as in literature. "Write with fury, correct with phlegm," was the precept of an old academician, and its observance is essential to excellence in the profession. Re-

flect, before you attempt to commit your thoughts to paper. Write, and let your composition lie for a few days; then revise and correct, or rewrite, as your cooler judgment may suggest. Rather than send an incoherent, ill-digested, and inconclusive essay to the press, revise or rewrite until you shall have brought order out of confusion, light out of darkness. At least, clearly apprehend what you wish to say: then be sure that you have said it. Say no more.

Many are so anxious to see their ideas "in print," that they hurry off their effusions with no regard to any thing but time. Many others, being too indolent to study, rely upon "the spur of the moment," the

necessity which they trust will "bring them out all right;" or—and we would fain place the inevitable *screen* between a credulous public and this last resort of mental imbecility—they seek that "intellectual aid" which may stimulate them into momentary energy, only to plunge them, afterwards, deeper into the slough of indolence.

It is barely possible that the man who pursues such a course may secure a partial success, but it will be the success of a mountebank; and he will only add a name to the long list of adventurers who, in securing notoriety, do but contribute their share to corrupt and debase the current literature of the day.

THE INFLUENCE OF CHARCOAL UPON PLANTS.

THE strangely beneficial influence of charcoal, when finely powdered and placed around the roots of plants, has long been regarded with much curiosity by horticulturists. Notwithstanding the careful experiments of Lukas and Liebig, many erroneous conceptions concerning its nature prevail, and are so firmly fixed as to appear almost ineradicable. As it involves some peculiar scientific principles, and therefore interests scholars as well as horticulturists, we give a brief *résumé* of the observations made by the distinguished savans to whom we have referred.

The matter was first scientifically considered about 1840, by Edward Lukas, who noticed in a hot-house at Munich, that in the division set apart for tropical plants, the bed was filled with finely powdered charcoal, through which heat was gently diffused by means of iron-pipes. The plants placed in this bed acquired a healthy appearance, unequaled by any growing under ordinary circumstances. The blossoms of some were of so remarkably rich colors, that all who saw them asserted they never had before seen such fine specimens. One plant produced seeds without artificial aid, although it was usually necessary to apply the pollen by hand. Such remarkable re-

sults attracted Mr. Lukas' attention, and led him to investigate the causes.

In his first experiment he mixed charcoal and garden mold in the proportion of two to one, thereby making a soil, in which he planted several species of different genera. Some of these soon attracted the attention of connoisseurs, by their singular vigor. They surpassed all others growing in the usual way, and retained their vitality to a longer period, being still alive in November, while all others had died long before. In a soil composed of charcoal and mold in equal parts, he placed a cactus, which doubled its size in a few weeks. He afterwards used charcoal, free from admixture, and found that slips from many plants took root very readily in it. The most remarkable cases specified by him, are those of tufts of *pinus*, and leaves of *ficus* and *polyanthus*, which, without the aid of previously developed buds, took root and flourished.

During the investigation he ascertained many interesting facts. Charcoal possesses the power of restoring sickly plants to health. One which had been drooping for three years, was cured in a very short time by the application of charcoal. An orange-tree, whose leaves were turning yellow

ed its green color in four weeks after charcoal had been substituted for the layers of mold in its pot. The charcoal used by Mr. Lukas, in his earlier experiments, was obtained from fir and in his later experiments, he found that charcoal, prepared by calcination of lignite, possessed greater advantage; and this was more effective after exposure to the open sphere during the winter. In experimenting with charcoal, it is essential to water the roots abundantly with water, so that the air has free access to the roots, and dries them very rapidly. It would therefore appear, that charcoal is injurious to plants not requiring a porous soil.

In his observations, Mr. Lukas deduces the following inferences. The principal action of charcoal is undoubtedly in drying the parts of the plant, with which it is in contact, with their vital power changed, until the shoot or plant has come to put forth the organs necessary for support. It also decomposes and absorbs the excretions of the plants, thereby purifying the soil from putrefying substances, and tends to destroy the spongioles. Its action, whereby water may reach the roots, has also a beneficial influence. There can also be scarcely a doubt that charcoal undergoes decomposition, for, being used five or six years, it becomes a coaly earth; and if this be the

case, it must yield carbon or carbonic acid abundantly to the plants growing in it, and thus afford the principle necessary for the nutrition of vegetables. In what other manner can we explain the deep green color and great luxuriance of the leaves and every part of the plant, which, according to the opinion of men well qualified to judge, can be obtained in no other soil?"

The conclusions of Liebig from his experiments accord with those of Lukas, excepting the portion quoted. Liebig asserts that charcoal is the most indifferent substance known, and may therefore be kept for centuries without change or decomposition. The only materials which it can afford to plants, are a few soluble salts. The principal means by which it produces vigor, is its wonderful power of absorbing the various gases essential to vegetable nourishment. There is, it is true, an apparent decomposition of the charcoal; but this is readily explained. Buchner, in examining the charcoal which had been used by Lukas for several years, found a brown substance soluble in alkalies, which led him to believe that the charcoal had been altered. This substance, however, was nothing other than undecomposed excrements from the plants, and by cementing the charcoal powder together, it had given it the appearance of a coaly earth.

THE STORY OF PETER PEDAGOGUS.

A SWISS SCHOOLMASTER OF THE OLDEN STYLE.

CHAPTER IV.

"EXAMINATION-DAY" IN A SWISS SCHOOL.

Every day of examination is a most important event to the children, as well as to the schoolmaster. The former all have a desire to display what they have learned; which desire obtains a natural zest from the dread that they fail. A pity it is, that this anxiety does not spring from holier motives! The chief attraction which examination-offers to the boys, probably, is in their

anticipations of the bright batzens they are to receive as prizes. The girls rejoice in the prospect of donning their white sleeves, and of appearing like birds in the summer sunshine. But it is not so with all. At every examination, there is to be seen, here and there, a pale, downcast-looking girl, in a worn-out jacket. These poor children have no pretty dresses, and no white sleeves to display; they sorrowfully try to hide their arms in their miserable garments, and thus they sit dolefully

among those who rustle with an ample supply of new and bright clothing. There is no joy in those little hearts; timidity lurks in their melancholy eyes, and the batzen alone casts a shade of pleasure over their wan features.

On the schoolmaster, the day of examination has much the same effect as it has upon the little girls with the shabby dresses. He has to take delight in paltry things; greater ones not being vouchsafed to him. No one takes the slightest notice of his exertions in the school: the examiners being bent rather on finding out omissions than discovering the progress that has been effected. The schoolmaster endeavors to make a fair show of what has been done; but what he deems important appears trifling to all but himself. The village authorities assume great dignity; the Amman yawns stealthily, and, gradually losing patience, wriggles toward the minister, and whispers in his ear, "We have had enough now; just get him to come to a conclusion." Now and then an encouraging word is dropped, when a specimen of penmanship slightly better than the rest is displayed: but, if the father is present, *he* is congratulated; not the schoolmaster, who brought out the latent talent. If, at the termination of the examination, the teacher is told that the examiners are not ill-pleased with the children, that they have not done badly; but, perhaps, it would have been an advantage if their reading had been more fluent; and that, in consideration of the general proficiency, a gratuity would be voted him towards lighting and heating the school-room, though the committee were in no way bound to do so; if, I say, he is told this much, he has great reason to be thankful.

At the first examination at Gytiwyl, I had not even that satisfaction. The minister, who meant me no harm, but who, perhaps, was really anxious to ascertain what the children had actually learned, spoiled, so far as I was concerned, the whole affair. When the children began to repeat what they had learned by heart, he ordered them to put the books out of their hands, and hide them under the tables. He said he did not like the system of peeping into the books when they were repeat-

ing lessons from memory: it reminded him too much of a clergyman, who, with a written sermon before him, kept looking into it and out of it, like a goose drinking water; besides, the lesson was not learned, if they had to have recourse to the book at every moment. This was all very true; but my scholars having been always accustomed to hold their books in repeating their lessons, and now not knowing what to do with their hands, were completely put out, and the repeating, on which I had calculated largely, came to a complete stand-still.

The construing, however, went off better even than I expected. The children managed to go through the who's, to whom, etc., very smoothly. The prebendary remarked that it was marvelous the novelties that were invented in school-teaching: in his younger years the children learned their prayers, which they rattled off like spinning-wheels; yet they made very good managers and householders for all that; perhaps even better than those who had their heads filled with modern nick-nacks.

While the children were stating the who's, and to whom, of the words "Cedars of Lebanon," my marplot friend, the minister, stepped forward, and asked them what a cedar was? This question was followed by a dead silence.

"Is it a man or an animal?" he asked.

This time one of the children boldly replied, "An animal."

"Very good," said the minister; "is it a four-footed or a creeping animal?"

"A four-footed one."

"A donkey, or an ass?"

"A donkey," was the prompt rejoinder.

"Now then," continued his reverence, "is Lebanon a tree or a bird?"

"A tree," cried several.

"Is it a fir, or plum-tree?"

"A plum-tree."

"No," he said gravely, "you are all wrong: they are not four-footed animals; they are trees; and Lebanon is a place where they grow abundantly."

He then censured the children pretty smartly, for saying things were what they were not. But how could they know any better? I had not told them what cedars of Lebanon were, and who else could have told

The Amman remarked, that for his I did not know what cedars of were any more than the children; never thought of troubling his out such things: that sort of wis- answered no good purpose; it only e children inquisitive and forward, one was at a loss what to do m: so long as they could say their and repeat their catechism, he was y satisfied.

Amman's excuse for the children's e was not, however, very compli- to me, particularly as I thought I ed them out all but perfect. It is minister told me at the end of the tion, that he was perfectly satis- the progress that had been made; ould easily see I had taken a great ains with the children, which was to my credit. I would do very d added, if I would explain the of the words, as well as parse But how was I to do this? My teacher, who did not know what e was, had not told me what the f Lebanon were; and, indeed, all s in the world could scarcely com- : things he had not told me. ourt assessor, however, paid me a

great compliment. He said that I was the right man for them: I had kept myself to myself, and did not bother anybody; when- ever I bought any thing, I had paid for it on the spot, or at the time I promised. This he considered one of the greatest merits which a schoolmaster could possess. If, therefore, I did not chance to know every- thing, or if the children could not answer every question put to them, I was not likely to lose my place on that account.

This was a balm to my wounds. It was perfectly clear, however, that what pleased one examiner displeased another. Who then can complain of the unfortunate schoolmaster, if he takes short tacks, and, with an appearance of locomotion, does not move forward at all?

I accepted the invitation of the com- mittee, to take a bottle of wine with them, hoping to hear something that might cheer me; but I was, as usual, disappointed. When we sat down, they began to talk of what cows fetched at the last Berne fair; then the conversation diverged into the proceedings connected with some pending lawsuits, and so it continued till the party broke up; considerable wine having mean- time been consumed in discussing the knotty points of local jurisprudence.

GERMAN EDUCATION IN THE UNITED STATES.

II.—A PROPER FOUNDATION FOR LANGUAGES.

r German schools, education has greatly improved; first, by means ssors versed in philology, com- grammar, and the mathematical and having aptitude for teaching; nd, by that judicious selection of which will best discipline and he mind of youth. Some of the nglo-American schools might be by a similar reform.

he Latin language is not always he subjects of study, is to be re-

It is indispensably necessary to nment of the English that the La- mar be the base, or medium, hich to convey analytical and tive knowledge. The folly of at-

tempting to instruct pupils in the higher branches of French or German, without this previous grounding, will be admitted by all philologists.

Hence the necessity of radical reform in the method of parsing. To teach that every preposition must govern the objec- tive case only, is one of the violations of the science of language. The limiting of the cases to three, took place when modern languages were not the subject of study in English high-schools, and when corre- spondence between savans and literary men of all nations was in the Latin tongue.

But all this has changed. Our language has become more classical than Saxon; the knowledge of the French and German is

almost indispensable; and hence (for those who eschew Latin, because it is not a modern language) the necessity of some method of analysis analogous to that of Latin in the study of English, so that it may be available in teaching modern languages.

We, therefore, advocate the use of the six Latin cases, instead of the three Saxon. The preposition *of*, and all its compounds, ought to be termed the signs of the genitive; *to* and *for*, with their compounds, the signs of the dative, excepting when *to* conveys the idea of "action" to a person or place, it assumes the accusative. All prepositions conveying to the mind the idea of motion or action, are signs of the accusative. The signs of the ablative are *from*, *with*, *against*, etc., and prepositions implying *rest*.

A proper definition of the tenses is also needed, at least such a one as can be applied in a great measure when construing. Let us take, for example, the past tenses of the indicative mood, which we will call the imperfect, perfect definite, and perfect indefinite. The "imperfect" would denote something that used to happen, as well as something that occurred at a period of time not specified; as, "When I was young, I spoke as a child;" "He visited the theater, during his stay in Paris." The perfect definite would specify the time; as, "I saw him yesterday," etc., while the perfect indefinite would denote an occurrence that took place during any given space of time; as, "He breakfasted this morning," etc.

Those conjunctions which are the signs of different tenses, according to circumstances, should be carefully studied, and be clearly explained by varied examples. These are but a tithe of the matters with which the comparative grammarian should accompany his instructions in the analysis and science of the languages, giving occasionally such examples in Latin, French, or German, as may illustrate the point.

We would here ask, how it is that Americans (we mean those of classical education, the best which the country can give) are, in a great measure, void of all etymological and historical knowledge of the English language, while some of the most ordinary educated German minds overreach,

in this respect, the best of Americans? We contend, that it is absolutely necessary that the whole anatomy of language should be the object of a first-class English education; or at least so much as to warrant a respectable knowledge of the varied material with which the structure of the English language is put together and embellished. A time will come when in America such philological study and historical research will be obligatory in our best schools. Is it not deplorable, that for the most part studies should be selected and regulated according to their commercial or market value, and not for their value in developing and arousing the thoughtful faculties of the mind?

Germans, who in general appreciate philological lore, ought not to neglect establishing in the higher classes of their academies and institutes, at least an elementary course of the above character.

Those studies which especially develop the faculties of the mind are, English, mathematics, classics, or modern languages. Music, botany, chemistry, and some branches of natural philosophy, ought usually to be omitted in the synopsis of studies—too often they are used as tinsel wherewith to conceal what is imperfect and unsubstantial.

We wish to be understood as being opposed to the study of these useful sciences, only where their introduction would prove prejudicial to the foundation studies. The modern or ancient classics, mathematics, and English will be found sufficient for all purposes of education and training for youth between the ages of eleven and sixteen.

In many cases, a great *variety* of studies arises from the morbid zeal of the instructor, who, in this age of fast-living, may imagine that a smattering of every thing is necessary. Parents share some of the blame; for the principals, especially of private schools, receive their patronage according to the variety on their bill of fare.

There are many parents who may be compared to the anxious mother in a French play. She wished the professor to give her son a *tinge* of all sciences and learning; "*Je désire que mon fils reçoive un teint de tous les sciences*;" the

s: "*Madame, vous seriez mieux
chez un teinturier:*" Madam,
better send him to a dyer. We
whether most instructors of the
time would have the courage to
appropriately. We hope, how-

ever, that the time is near at hand, when
"a little, well learned," will be considered
more useful than surface knowledge of
varied hue, which fades and reveals a
foundation of mind almost incapable of
successful treatment.

THE RIGHTS AND OBLIGATIONS OF TEACHERS

AN IMPORTANT DECISION BY JUDGE SANFORD.

Following decision, rendered by
Judge Sanford in the case of Mr.
who was prosecuted for assault
upon the punishment of a pupil
school, will be read with great in-
the matters of which it treats
of practical importance, and are
correctly understood by very many

LEWIS. } CITY COURT, New Haven.

a prosecution brought by the
first John G. Lewis, principal of
the public schools in New Haven,
him with an assault and battery
Francis M. Hoban, a pupil in the
the 21st day of July last.

reference has been made by counsel
applicable to cases of this char-
may be well to consider for a
what the legal rights and powers
schoolmaster are, in respect to the
of punishment, where, in his
the same is necessary to prevent
tion of an offence, on the part of
, and for the support of good
and proper discipline in the
say, in his judgment, because,
nature of the case, the master
determine whether punishment
ary. Says Judge Blackstone:
ster is *in loco parentis*, and has
portion of the powers of the pa-
mitted to his charge as may be
to answer the purposes for
is employed."

ht to inflict punishment, for pro-
belongs to the master, the law
othed him with that authority;
question is simply in what form,

and to what extent, it may be administered
by him.

Judge Swift, remarking upon this sub-
ject, says: "A schoolmaster has a right
to inflict moderate corporal punishment
upon his scholars, for this is necessary for
the support of good government in his
school; but he should reserve this as a last
resort, when all other measures fail. He
should avoid all unnecessary severity, or
extreme cruelty. If all gentle and mod-
erate measures fail, the master is vested
with the power of inflicting corporal pun-
ishment. This should be done with cool-
ness and deliberation, not in the heat of
passion, and with a suitable instrument;
the blows should be inflicted, not on the
head, but on those parts of the body
where there is no danger of material in-
jury, and with a moderation or severity
proportioned to the nature of the offence,
and the stubbornness of the offender."
1 *Swift, Dig.*, 63.

The Supreme Court of Massachusetts
has held, that "if in inflicting punish-
ment upon his pupils, the master goes
beyond the limit of moderate castigation,
and either in the degree or mode of cor-
rection is guilty of any *unreasonable* and
disproportioned violence or force, he is
clearly liable for *such excess* in a criminal
prosecution." 4 *Gray's R.*, 86.

In North Carolina, it has been held that
"a teacher will not be held responsible,
unless the punishment be such as to oc-
casion permanent injury to the child, or
be inflicted merely to gratify his own evil
passions." 2 *Dev. & Bas.*, 365.

This is the only case in which the court
undertakes to define what *excessive* pun-
ishment is—namely, "Such as to occasion

permanent injury to the child," and is not, in this regard, sustained by the more modern authorities.

I refer to but a single decision further, and I quote somewhat at length.

In the case of *Lander vs. Seaver*, 32 *Vermont*, 124, the court used this language: "In determining what is a reasonable punishment, various considerations must be regarded, the nature of the offence, the apparent motive and disposition of the offender, the influence of his example and conduct upon others, and the sex, age, size, and strength of the pupil to be punished. Among reasonable persons much difference prevails as to the circumstances which will justify the infliction of punishment, and the extent to which it may properly be administered. On account of this difference of opinion, and the difficulty which exists in determining what is a reasonable punishment, and the advantage which the master has by being on the spot, to know all the circumstances, the manner, look, tone, gestures, and language of the offender (which are not always easily described), and thus to form a correct opinion as to the necessity and extent of the punishment, considerable allowance should be made to the teacher by way of protecting him in the exercise of his discretion. Especially should he have this indulgence when he appears to have acted from good motives, and not from anger or malice. Hence the teacher is not to be held liable on the ground of *excess* of punishment, unless the punishment is *clearly* excessive, and would be held so in the general judgment of reasonable men. If the punishment be thus *clearly* excessive, then the master should be held liable for such excess, though he acted from good motives in inflicting the punishment, and in his own judgment considered it necessary, and not excessive. But if there is any reasonable doubt whether the punishment was excessive, the master should have the benefit of the doubt."

I think, therefore, the following may safely be adopted as the rule: that while the master, to a certain extent, and for certain purposes, stands *in loco parentis*, and has, for sufficient cause, the right to

inflict *reasonable* corporal punishment, while the pupil is under his charge, he must exercise a reasonable judgment and sound discretion in determining when to punish, and to what extent; but the punishment must not be excessive or cruel, nor inflicted for the purpose of gratifying private malice or his own evil passions.

Punishments may be severe, yet entirely reasonable; and on the other hand, even moderate punishments may, under certain circumstances, be unreasonable; but *excessive* and cruel punishments are not only unreasonable, but unlawful, and for their infliction the master may be held criminally responsible.

Whether the punishment inflicted is excessive or cruel, is a question of fact to be determined in each particular case that may arise.

In the case now under consideration, if I could find from the evidence that the injuries upon Hoban were caused by the accused, in the manner and under the circumstances detailed by the boy himself, I should have no hesitation in saying that the punishment inflicted was *excessive* and *cruel*, and that the master had made himself *criminally* liable.

But what are the facts as established by the testimony?

On the 21st of July last, and during the regular school-hours, Mr. Lewis, as a punishment for some supposed misdemeanor on the part of young Hoban, directed him to take his book and go to the recitation-room. The order was reluctantly obeyed. At the closing of the school, but before the pupils had retired, he came out of the room without permission, and was immediately ordered back by the teacher. The order was several times repeated, and Hogan repeatedly refused to obey. Seizing two or three brushes, which were lying near by, with oaths and language most foul, and threats of violence if the teacher approached him, he dared him to come on, and all this in the presence of a large number of the scholars. Hoban is a boy of fourteen years of age, of fair size for his years, and, as it would seem, possessed of more than ordinary strength. It is clear, under all the circumstances, there was but one course for the teacher to

He must vindicate his authority. It is necessary for the good of the school as well as of the boy himself, that he should learn obedience and submission to authority. For the milder offense, punishment had been inflicted by sending him to the recitation-room to study by himself. For the more serious offense, the insults to the teacher, the refusal to obey a proper command, the use of profane language, the threats against the teacher if he should attempt to punish him, it was manifestly fitting and proper that he should receive a severer punishment. Mr. Lewis now approached the boy, who endeavored to strike him with his brushes. A struggle ensued, in which the teacher, notwithstanding the resistance of the pupil, succeeded in getting him into the recitation-room; and I do not find that he used more force than was necessary to accomplish this

as during this struggle that the boy received the injuries about the head, though I have no reason to believe that they were the result of blows inflicted directly by the accused. However it may be, the teacher was in the discharge of his duty, the boy was guilty of unlawful resistance; and I apprehend the law to be, that if the pupil resists an injury while making unlawful

resistance to the master, who is using no more force than is necessary to enforce obedience to a lawful command, or to accomplish a lawful purpose, the injury thus received is not the punishment for the excess or cruelty of which the master may be held criminally liable.

The boy testifies that he was struck on the head with the butt end of a horse-whip. The fact is, no such instrument was used. He swears, too, that he was knocked down, and afterwards lifted by his feet, and his head thrown against the iron support of a chair. This story is not only improbable, but its falsity is abundantly established by the testimony of other witnesses, teachers as well as pupils. He states, that he made use of no improper language. On the contrary, it appears that he was exceedingly profane and indecent in his remarks; and on other material points he is so clearly in error, that I am compelled to take his whole statement with much allowance.

The boy was whipped by Mr. Lewis, after getting him into the recitation-room, but I do not find that the whipping was either cruel or excessive, and though severe, taking into consideration all the circumstances under which it was inflicted, it was not in my judgment unreasonable, but entirely justifiable. The accused is therefore discharged.

THE STATE UNIVERSITY OF IOWA.

colleges of the West are rapidly taking a prominent position among educational institutions. In point of richness of instruction, of the character and attainments of their *alumni*, and of self-denying devotion and untiring industry of their faculties, Western institutions will compare favorably with those of the East; while their rapid and early development generally far surpasses that of more venerable Eastern predecessors. Among the educational institutions

of the West, is the subject of this sketch.

It was organized in 1847; and, thanks to that wise and liberal policy, two townships of land were given by Congress, for its endowment.

The institution was not opened for instruction for several years after its incorporation; and during the few first years of its progress, after its opening for the reception of students, the studies taught were mainly those belonging to a preparatory school.

For several years previous to its temporary suspension in 1858, however, the character of the studies taught in the institution approached more nearly to that of a collegiate course.

Hon. Amos Dean, of Albany, New York, was president of the institution at this period.

After a suspension of two years, the University reopened in 1860, under the presidency of the Rev. Dr. Totten, formerly of Trinity College, and of the College of William and Mary. Dr. Totten resigned in 1863, and was succeeded by Rev. Dr. Spencer, the present incumbent.

The plan of organization of the University was originally that of departments, similar to the University of Virginia. Six departments of instruction were organized in the University, at its reopening in 1860: Moral Science and Belles-lettres; History and Political Science; Languages; Mathematics and Astronomy; Chemistry and Physics; Natural History.

Each of these departments was divided into several classes; and to each of these classes an amount of study was assigned, sufficient to employ the student at one daily recitation for one year. A completion of the studies of any ten classes, entitled the student to B. S.; fourteen, to B. A.; eighteen, to M. A.

During the past year, however, the plan of organization has been materially changed. The department plan has not been altogether abolished, and students are still permitted, to some extent, to elect their studies. Two regular courses of study of four years' length, denominated classical and scientific, have been established. The former is the regular collegiate course of American colleges. In the latter, French and German and a more extended course of natural science and mathematics take the place of classical studies. A completion of the classical course entitles the student to B. A.; three years of the scientific course, to B. S.; and the entire scientific course, to B. Ph. Students who complete a post-graduate course of one year's length after receiving B. A. or B. Ph., receive respectively M. A. or D. Ph. These higher degrees are also conferred in course, after three years, upon graduates, who pursue

general, literary, or scientific studies during that time.

In the classical course, French and German may be substituted for Greek; and two years of Latin may take the place of an equal amount of the French or German of the scientific course.

In addition to the departments previously mentioned, one of modern languages was established at the last meeting of the Board of Trustees.

A Normal School, for the education of teachers, has long been in successful operation. This department continued to impart instruction during the suspension of the University from 1858 to 1860.

A Preparatory School, with a three years' course of study, is also connected with the University.

Instruction is also given in gymnastics and military drill.

The buildings occupied by the University consist of the former State House, donated by the Legislature in 1857, and a large brick building. A new building is nearly completed, which is designed for a chapel, and for the accommodation of the department of chemistry. When completed, the facilities for the practical study of chemistry, under the accomplished professor of that department, will be equal to those of any institution in the country.

Its library, philosophical apparatus, cabinet, etc., are valuable; its endowments liberal; and its patronage and influence are yearly increasing. The following shows the number of students (both sexes being admitted) for each year, since the reopening in 1860:

1860-'61	172
1861-'62	254
1862-'63	288
1863-'64	434
1864-'65	440

Officered by an intelligent and liberal-minded board of trustees, and an able faculty; endowed with ample means; situated in the heart of a rapidly developing region of country; and under the foster care of a noble State, which has given it several liberal appropriations, the Iowa University may be confidently expected to bear an active part in the great work of diffusing knowledge among men.

PROGRESS IN PRIMARY INSTRUCTION.

THIN the last half century, and more especially within the last years, the art of primary instruction made rapid advances. Earnest thinkers have been active. Theirs it has been, partially at least, the hitherto mysteries of the young mind,—to learn, in view of the natural order, the *unfolding* of its faculties, how they best strengthen and develop these, according to nature's laws; at the same time that we are leading the child eagerly and successfully on, in the pursuit of know-

ing learned *how* to do this, we have had a lesson of first importance in the teaching; for, as all agree, the two ends to be attained in education, are culture and symmetrical development of the faculties, and the acquisition of edge.

What are we taught as regards the *principles* of acquisition and culture? Beginning with the mind of early childhood, it is found to be accessible only through the senses. Such knowledge as is to be clearly impressed upon the mind, must be of one or more of these, is not such as can be of any use to the child, and must be held in reserve for him to acquire in later years. It is also found (simply clear enough, now that it is known) that the mental and moral faculties, like the physical, can be developed and strengthened only through proper *activity*. The child must be led to seek after, and gather strength for himself. We can not do for him, if we would have him grow stronger while acquiring. The old method, as for others to collect knowledge, and then to impart it to the child through the medium of text-books. This, however, could not be done until after the child had spent many of his earliest and most important school-years in learning how to learn. Experience proves the better plan to lead him to *use* his senses—to see, to hear; then *tell* what he sees and hears, and that he may learn to think and to act thus to gather strength and varied

knowledge *both*, at the same time that he is learning to read and to spell, to write and to draw, according to the best method of the schools.

As another principle upon which to base instruction, we are taught that the highest *enjoyments* of life are those which come to us through the proper and healthful exercise of our faculties; and that we may give both happiness and strength to the child-mind, by bringing before it objects which will awaken to activity those mental faculties of which the child is the possessor. What are these faculties of the child? Has he the power to reflect and reason? Evidently not. He does not dwell long upon an idea of any kind. Even his deepest sorrows are soon forgotten, and may, in many cases, be almost instantly dispelled by some pleasant sight or sound. Thus, we find that through the senses of the child must come his chief *enjoyment*, as well as his knowledge. Thanks for the revelation! Happy for the teacher to know that such instruction as *pleases* will also *strengthen*, and *only* such! Happy fortune for the child! Hereafter his mind is to feed and grow upon the very objects in which he finds his chief delight. Even his toys, in earliest years, may be made to minister to his growth. In somewhat later years, all simple and attractive objects in the world of nature, mechanism, and art, may be made conducive to the same result. In still later years, *all* knowledge to be gathered from the world of matter and *mind*, will contribute to the same end; because of the *love* of knowledge awakened by the pleasure of early acquisition.

It is, then, by calling attention to attractive objects, and giving instruction about them, or rather leading the child to discover all that he can about them, that the slowly awakening powers of little children are to be first aroused to active, *joyous* life. No sooner have we done this, than we find all the faculties of the child-mind awakened to spontaneous, healthful, and happy exercise. Through the senses, sensation and perception be-

come active, and conception vivid. Clear conceptions leave strong and lasting impressions. Thus memory is strengthened. And again, the mind, working with memories and new conceptions, is led to separate and combine them into new forms and fancies. Thus, imagination is unfolded and developed. And so it is through the whole range of mental faculties. The activity of any one serves to strengthen it, and at the same time, to unfold that coming next in the natural order of development. With a building of any kind, the broader and deeper the foundation, the heavier and higher may be reared the superstructure. So with the successive faculties of the mind: the more fully developed the earlier perceptive, conceptive, representative, and imaginative faculties may have become, the more amply stored will be the mind; and the clearer, stronger, and quicker will be the reflection, reasoning, and intuitive powers of later years.

Guided by such principles and laws of culture and acquirement, thinking minds have wrought out, within the last few years, a system of "Object-Teaching" for children, the *modus operandi* of which needs only to be understood to be accepted with joy, and even with gratitude, by all who work with a high and holy purpose in the cause of primary instruction. Many there are among teachers, it is true, who have heard and read of the "improved system," but who, having no soul in their work, no appreciation of the responsibility of the position they occupy, have been satisfied only to read of it, and give it no further thought. But others there are, who, understanding the principle upon which the system is based, and realizing the value of the child-life given to their care, are solicitous to know something of the details of the plan, that the little immortals whom *they* have to teach, may be receiving, as soon as possible, the benefits of this plan of Object-Teaching; or at least, that they may be preparing themselves to render faithful and efficient service in the school-room, when this improved system shall have found universal acceptance.

For the perusal of the latter class, the following *partial* sketch of the plan of

Object-Teaching, and of its effects, are given.

The teacher may begin with conversational exercises, to develop in the mind of the child *ideas* of simple form and color, weight and measure, number, place, sound, etc. This he may do by the aid of charts, illustrating some of the simplest geometrical forms and figures, and many of the most beautiful forms in nature; also by aid of apparatus, showing clearly how the various simpler kinds of weighing and measuring are done, and how much various objects weigh and measure; also by aid of concrete objects for counting, and of outline maps, for locating places (familiar to the children taught), and of various instruments to show differences in sound, etc. This series of easy lessons is followed by the presentation of an endless variety of simple objects to the child; and he will himself ask, and many times be delighted to find himself able to correctly answer, questions in regard to all the obvious qualities above named, and belonging to each of these. After this, the teacher may begin to classify, and give a series of lessons, in such forms only as relate to a particular subject, as the forms which make up the letters of the alphabet. In aid of this series, there are reading charts, letter and word charts, and very excellent primary readers now in use. At the same time that the series upon reading is being given, another may be given upon the simplest forms of plants and flowers, or of birds, fishes, fowls, quadrupeds, or insects. A very beautiful set of colored charts have been prepared for illustrating such subjects. So also have very many books been published, full of valuable information, arranged in precisely such order and form as the teacher would wish for his pupils. Returning at a later time to less attractive objects, these may be, like the flower, or bird, *not* simple in form, but having various parts to be seen and named; and now, not only may the more obvious qualities of the objects, and their parts, be dwelt upon, but those less obvious; as, for instance, whether smooth, or rough, hard or soft, heavy or light, etc. And again, whether they will bend or break easily,

or burn in the fire, dissolve or not ter, etc. Such *ideas* of qualities may ven together, finally, with all the *diffic names* expressing the same.

still, a series of lessons may be , in which children are taught con- ang the materials of which objects are oised, and, if a natural product, where ; if manufactured, where and how , etc. Coupled with this, knowledge be given concerning the *uses* of these ts. In this way may the child be along almost imperceptibly from the n to the unknown, from the concrete e abstract.

us have we given in partial outline, omised, the first steps in Object-Tea- 'eaching. From these may be gath- also an idea of the plan upon which iter steps are carried out. For ample nation as to the details of this m, the teacher may have recourse to ' excellent works on primary instruc- some giving full directions concern- Object-Teaching, in all its branches, o its fullest extent also in time. One or gives a "daily programme" of ex- a, varying with successive weeks and , so as never to become monotonous. may serve to aid some teachers in- ienced in the use of this method. her author gives an "approximate amme" for instruction, extending igh the first ten years of the child's d-life.

e *effects* of this system upon the mind heart, are the best arguments in its . They commend it most, and prove correctness of those principles upon h the whole is based. Briefly enu- ting the results which experience in ee of this method has shown, they s follows: Through such teaching the acquires more knowledge, without wearisome effort, than is usually ac- d by the old method with any amount d. He, at the same time, receives more *culture*, because of the healthful action called forth. He is taught that thereauty in all things useful, and *use* in ings, whether beautiful or not. He led with a love for the beautiful, and be useful—with a love of truth, good- and nature; for with these he had

been in constant, joyous communion ever since commencing school. His mind has been so full of varied thought upon sub- jects pure and ennobling, that there has been no time for low and idle thoughts. He is imbued with a love of study, which will keep him ever active in acquiring. Obeying nature's injunctions, and imitat- ing nature, he will be forever dispensing upon those around him, blessings resulting from his acquisitions. Of this, there is no doubt; for together with this new and elevating system of *mental* culture, we find ever associated the moral and the physical, thus rearing up fair forms of manhood and womanhood, for *wise, holy,* and *efficient* service in the cause of truth and humanity.

This modern system of teaching has been brought to its present state of perfec- tion only through much of earnest thought and care. It is intended for the benefit of *all* children. The child who is still found going to school, and toiling over that in which he has no interest, because far beyond his power to compre- hend—thus wearily wasting the most precious years of life—such child is woe- fully defrauded. He may suffer in pa- tience; but suffers nevertheless. For the irreparable loss he sustains in the failure to receive that early preparation for a full and harmonious culture and growth, which, by virtue of having been born in this age and country, is each child's birth- right—for this *loss* of the child, all edu- cators are to some extent responsible. Teachers, do you not feel this to be so? Remembering the benefits of this new system of primary instruction, will you not let it be your resolve to secure them to your pupils?

It may cost you a strong effort at per- suasion, to induce those in authority over you, to inform themselves as to its merits, and give their sanction for its adoption and daily use; but after such effort, you will only be the stronger and the better. When teachers shall have been faithful to this duty, then shall each child attend- ing primary school have fair promise of becoming, through early teaching, those blessings to society which it is the mission of all instructors to supply.

AMERICAN EDUCATIONAL MONTHLY.

DECEMBER, 1865.

THE DISHONESTY OF TEACHERS.

HERE it is in type—the dishonesty of teachers! The words mean more than they may seem to imply. The “soft impeachment” is not to be construed into a charge of mere disingenuousness. For although, doubtless, there are men in the profession whose want of fairness and frankness, whose trickery and duplicity, whose entire moral physiognomy, would make a showy sketch on paper, yet we believe that they will rarely be found. Dishonesty would be, perhaps, an appropriate term to apply to the clipping of the wings of time, when “short hours” and short sessions characterize the school-room, and when recitations are made to consist in an echoing of text-book phrases, a parroting of author’s words, on the part of the pupils, with no forcible, interesting, carefully studied explication on the part of the teacher, who is satisfied with the gloss of learning, without regarding its grain and substance. Not a few may here see a counterfeit presentiment, which they will imagine “means *me*.” But our homily is not for them. It is as a business man that the teacher evinces dishonesty. True, a swindling pedagogue would be somewhat of a curiosity, even in this age of problematical rectitude, when the old saw, “Honesty is the best policy,” seems to have been reset, and the popular sentiment may be rendered, *Policy is the best honesty*.

The teacher’s dishonesty is of a negative kind. But if two negatives are equal to an affirmative, surely a dozen acts of negative dishonesty are tantamount to positive fraud. Now, unfortunately, in the business relations of teachers, nothing is more

common than this qualified, negative knavery. The teacher’s promise, in relation to money matters, is not to be relied upon. He assures you that he will “pay that little bill” on a certain day, but you might as safely depend on the man in the moon for a settlement. Take his note,—it is not worth a school copy-book. Remind him that his promissory instrument has reached maturity, he will express regret at the necessity of disappointing you, and in his heart will question whether you have been disappointed at all. “You have my note?” he says. “Yes.” “And it is on interest?” “Certainly.” If we could read his thoughts, we would see that he would like to make one more inquiry—“Then, in the name of Cæsar, what more can you desire?”

The truth is, the teacher is so far removed from the ordinary scenes of commercial life, he is so nearly exempt from the harassing mercantile experiences with which so many are familiar, that he has only a faint conception of the perplexities which his remissness may occasion. Moreover, fortune-making is almost entirely out of the question in his peculiar sphere; and popular feeling has impressed it upon his mind that he is a sort of professional philanthropist, who must ignore money-getting. The avowed object of most other occupations is to make money. His, he well knows, has another purpose. The result of these influences is, that, as a financier and as a business man, he is inexperienced, incompetent, weak, and unreliable. Meaning well, he promises well. But he is unable to fulfil his contracts and obligations. He has not exercised due forethought; he has not provided for contingencies; he has not the tact by which to make others render to him his due; if disappointed in his expectations, he has not the power to take hold of unfavorable circumstances with a firm grasp, and to rearrange them for his service.

All this is deplorable. For while honest,

it may be, at heart, he must appear to be a knave. He himself suffers, in self-respect, in equanimity of mind, and in popular estimation. And, with him, others suffer. Others have relied upon his assurances, and are injured by his want of promptness and energy.

Teachers, we believe, should turn over another leaf in the study of finance. They should know that a stigma is becoming attached to their profession respecting this entire subject. And in order to overcome the evil, they must realize that, in money matters, the world shows them no favors. "School-funds not received" is never seen in the counting-room. The teacher's money is as good as any other, people think; and when he promises and neglects to pay, they are very apt to think they suffer loss. The "root of all evil" is so deep in the popular mind, that people care not for "square root" demonstrations on the blackboard, when they expect fractional currency at the counter. And, verily, we ourselves think that familiarity with "Equations" is a poor substitute for equity.

WINTER EVENINGS: EVENING SCHOOLS.

THE winter winds are taking wing, and will soon be singing at our doors. On some, the winter twilights fall as quietly as snows upon the roof, bringing memories of fireside circles broken, never to be reunited. To others, the twilight will bring gladness and exhilaration, and mirth as boisterous as the whirling blast. How to employ the winter's evenings is a problem which many have not solved. Many a man of threescore years has never learned the use of a winter night. What wonder, then, that so many of our young men should neglect the advantages which winter nights should bring?

Thousands of young men, whose days are devoted to ceaseless toils in shops

and manufactories, are passing into the busy scenes of mature life, illiterate, unreflecting, and undisciplined, although a proper use of their winter evenings would enable them to bear the sternest trials understandingly and successfully. Of the various means in use for advancing the interests of the class referred to, literary societies, debating clubs, and similar organizations have long been popular. Time has proved that they are inadequate to the end proposed. The members are usually incompetent for their enterprise. In any association for mutual improvement, it has been said, a prerequisite is that each of the members has something to impart to others. Otherwise, the enterprise shares the fate of those financial schemes, in which Messrs. Gett and Keepe, and their speculating associates, secure a bank charter, not because they have money to lend, but because they want to borrow. You can not bank on poverty as a capital, neither by association can you improve on ignorance as a basis. The money must be somewhere, or it can not be loaned; the information must be possessed, or it can not be imparted. The debating society, consequently, has become a by-word. Our modern lyceums and associations for mutual improvement are usually mere myths in every respect except as organizations employing professional lecturers. These lectures are useful, but they do not reach the persons for whom our "young men's associations" were designed to provide. The libraries connected with these associations effect some good results, but not to the extent usually supposed. The books most in demand are not of the most useful character. One copy of Rollin's History, one set of Cleveland's Literary Compendiums, will suffice; but of a good novel twenty copies must be secured to meet the demand; and in the case of an extravagant story, with a ridiculous title, twice this number will be needed. Of one hundred books lately

taken out at one of these libraries, one was theological, three were historical, four biographical, four scientific, five poetical, five were narratives of travels and adventures; the remaining seventy-eight were novels and light fictions.

Under these circumstances, we say, let the number of our night-schools be increased. We can think of no more certain way by which to attain the results so much desired. Subordination and direction, if there were no other advantages which they possess over voluntary and unguided meetings of the young, were alone sufficient to give night-schools the preference over any thing which has preceded them. But the pupils are also advanced in solid learning. They are made capable of participating in debate or argument. And they have a taste cultivated which may turn their reading in the right direction. In New York, the evening school has become a permanent and important institution in connection with our regular district schools, and are open free to all who will attend. At the Cooper Union, too, are evening classes in History, Mathematics, the Natural Sciences, Drawing, Perspective, and Music,—the only requirement for membership being regularity of attendance.

Evening schools, both for boys and girls, should become a permanent part of the school system, and provision should be made for the instruction of the pupils in all useful branches, the more advanced as well as the primary. The night-school seems to us the very thing that was necessary to perfect our public school system. Its advantages, moral and economical, no less than educational, can not be overstated. Let this important auxiliary to intellectual progress be approved wherever practicable. Turn on your gas, Messrs. School Commissioners; light your kerosene lamps; let not our school-houses, in city or country, be dark, dreary, and unoccupied during the winter evenings.

WRITERS WANTED.

IS it not strange that teachers are not fluent in expressing themselves upon the current questions of the day? Their vocation takes them out of the circle of popular discussion, and their thoughts are turned to the development of mind. But it is wrong that they are not better able to freely discuss the different systems of education—to criticise what is wrong in the modes of mental training, and to commend, in proper terms, what is right. We shall not now undertake to explain why they are thus deficient. That such deficiency exists is too well known for the credit of the profession. True, the teachers' institutes, and other educational meetings, have of late years done something to "draw out" some of those who attend. But, very few take active part in such exercises, and hence little has really been accomplished in that direction.

The writing for our educational journals is done by the few, and not by the many. There is no good reason why this should be so, for all are thoughtful and have opinions of value which they have culled from their own peculiar experiences. Why should they not write? A full and free interchange of opinions, and a thorough discussion of ways and means of educating would be profitable to all.

Now we consider it fair to presume that our readers sympathize with us, in our endeavors to promote the interests of education in the publication of the *AMERICAN EDUCATIONAL MONTHLY*. Hence we say, "writers wanted," and we appeal to all educators, everywhere, to improve themselves, and help the *MONTHLY* by wielding their pens upon subjects which have been thoroughly digested in their minds. The aggregate of such efforts would prove wonderfully profitable to the cause. Give us, in concise style, items of educational intelligence. Use learning and research in

ing scientific articles—of two to four pages in length. We are already to pay a reasonable price for them. We are specially in need of short, dialogues for school exercises and lessons. Not one writer in a thousand has the peculiar qualifications required for producing a good and pointed dialogue. Hence such articles are all the more appreciated, since there is great need

of them, with such great scarcity. For the right kind of original dialogues, we are ready to pay liberally.

Communications for which payment is expected should have the price marked upon them. The money will be sent with the number which contains the article. When no price is named, we shall assume that the article is intended for a contribution.

EDITORIAL CORRESPONDENCE.

TARRYTOWN, November 17, 1865.

PHONOGRAPHY AND TACHYGRAPHY.

EDITOR—While everything else has been benefited by the many time-saving inventions of modern science, writing alone remains as slow and tedious as it was centuries ago. This must be tolerated longer. The requirements of the age demand an improvement of our means of representation by written signs, commensurate with other increased facilities for augmenting and transmitting knowledge. We must afford the loss of time and labor by our present method. We must do something briefer, simpler, and more radical change in our system of writing must be made; and as brevity, exactness can be best attained by making our writing phonetic, this doubtless, be a characteristic element of every system. But too much must not be expected of this element, in bringing about the desired reform. It will delay, rather than hasten the change; for, with certainty it will be received with disfavour, tolerated only because of the advantages incidentally connected with it. Several so-called improved systems of shorthand, phonography has been the most successful, and deservedly so; but there has long been felt the necessity for a system that, while avoiding the objections of Mr. Pitman's, should embody the good points, together with several others which phonography lays no claim to. It is essential that every sound in language should have its representation, and that the written word should have a sign for every sound in the spoken word no other, it is quite as essential that the power of these signs should be deduced by form alone; and that the signs should be written connectedly

and without blending with each other. They should also be simple—if possible, formed by one stroke of the pen, and such that the writing will flow naturally from left to right, and the word-forms be easily written and graceful. These last should never extend far above, nor below the line of writing, nor even turn back upon themselves. These are no easy conditions to satisfy; but they must be satisfied, before our present system will be given up.

The latest "improvement" that has been published, is a style of phonetic shorthand, called tachygraphy, in which the author claims to have fulfilled all the requirements of a practically perfect system. "It is," he says, "the result of a practical effort to conform the system of Mr. Isaac Pitman to the beauty of its theory." He says, further, "The phonographic theory was simple and beautiful, but it was departed from so widely in practice, that its value was nearly lost. We have given expression to that original design. We have wrought out a system as simple in fact as in theory." This is a strong assertion; and if it proves true, tachygraphy is the long-desired system, and the world is greatly indebted to Mr. Lindsley for it. But it would not be improper to examine the system a little, before assenting to its author's not over-modest claims. Under the head of "legibility" (Preface "Compendium," page 4), we read, "This system is, in this respect, far superior to any previous system of shorthand;" and further, "It is, in this respect, far superior to long-hand." And with regard to "brevity," he says, "In phonetic shorthand we make one simple stroke, for each simple sound."

These are plain statements; but unfortunately, it is upon these two "cardinal" points especially, that tachygraphy signally fails.

Of the twenty-four consonantal signs in the alphabet of this system, five (representing the simple sounds, h, w, y, j, and ch)

are compounds of other consonantal signs (representing r, l, t, and d), with frequently recurring vowel signs. For example, "j" is a compound of the two signs "a" and "d," so that the words "jam" and "Adam" look precisely alike when written according to tachygraphy. "W" likewise is a compound of "a" and "r," so that "wise" and "arise" are expressed by the same signs; and the same ambiguity is likely to occur with the use of the other three. An attempt has been made to obviate this difficulty by the introduction of an element quite as damaging to the system. This is the "connecting stroke," a silent sign, likely to be mistaken for a "dash" vowel sign.

Again, the so-called simple signs for j and ch so closely resemble the compound signs which represent the compound sounds "dl" and "tl," that they can scarcely be distinguished, even when written with the greatest care.

With the vocal signs, the case is much the same, although upon these, rests the chief claim of tachygraphy for superiority over phonography. In fact, very little examination will suffice to show that the author speaks the exact truth, when he says, "We represent the vocal sounds as *definitely* as the consonantal." There are nineteen vocal sounds, of which six are represented by small semicircles; six by dashes; five by "diamond points;" and two by dots. The first six signs are good, and would generally be distinct, if it were not for the compound consonant signs above mentioned.

The dashes are not so good. They are not very distinct, at best; besides, they will frequently blend with other signs, in spite of the greatest care; while many combinations, of frequent occurrence, can *never* be written connectedly, without merging the vowel signs with the consonants, so that they are lost entirely.

Such combinations as occur in the words, do, took, cup, none, bold, etc., may be mentioned as examples of this. The diamond points are liable to the same objection. They are compounds of the last-mentioned signs, and often blend with other signs, so as to lose the first or second half, while the remaining half represents some sound entirely different from the one intended.

The two dots, representing the frequently recurring sounds ai in air, and e in met, cannot "be joined in outline" at all, although this is a point, the importance of which, the author truly says, "Can scarcely be overestimated."

And judging from the number of detached vowel signs, other than dots, that are scattered over the pages of engraved tachygraphy, one would think that, either the assertion, that "the engraved forms of these signs are such as to insure the best joinings with the consonants," must be taken with more than usual allowance, or else we must abandon our long-cherished hopes of a system of writing that

shall be at once scientific, brief, and fluent. These are not the only points upon which tachygraphy falls, not only far short of the phonographic theory, but of phonography itself. But even if it were superior in every other respect, such minor virtues, however desirable, could never atone for so great a lack of clearness and precision. These alone must destroy the practical utility of the system.

Very respectfully,

J. RICHARDSON.

ASTORIA, Long Island, Nov. 8, 1865.

IT strikes me that the term *we*, behind which editors and critics are prone to conceal their insignificance, is singularly potent. On one occasion, Charles Matthews, Sr., while reading the London Times, came upon a sharp critique concerning his mode of acting, which so excited him, that he shouted, "Who the devil are *we*? If they were one man, why I could horsewhip him, or call him out. But who knows, there may be a dozen of them, all fools, who have to crowd their brains together to make one second-rate article?" Some persons have explained the use of this term by asserting that editors and critics regard themselves as the mouth-pieces of public sentiment. This reminds me of a joke by John Van Buren: "In old times," said he, "when any Democrat said, 'my friends' do not like this or that, he meant my father, or Silas Wright; but when Horatio Seymour speaks of his friends, nobody knows whom he means." Just so with editors and book-critics: they are self-constituted mouth-pieces of the public; and their importance is *self-importance*, generally speaking. (Perhaps I could have put this saving phrase a little earlier in the sentence; but then these modified expressions are, by no means, so forcible as point-blank denunciation).

Perhaps, by this time, you are wondering what is the drift of these remarks. Simply this. In your November number, a notice of Dr. Smith's "Principia Latina" is made the vehicle of slurring remarks concerning Dr. Arnold's method of teaching Latin. I have not seen Dr. Smith's work, but, as it is indorsed by Prof. Drieler, I suppose that it is good. But Dr. Arnold's system is good also, and is the only system by which a thorough and accurate knowledge of the language can be obtained. It gives us the language, little by little, by a careful arrangement of exercises and continued repetition. It gives us a synthetical knowledge of the language, and so fixes what we have learned, that it becomes part and parcel of our mind; in other words, is thoroughly digested and assimilated. Other systems give us the analysis of the language, but leave us in ignorance of the synthesis, so that, if I may so speak, the knowledge is in lumps, crude and undigested. Every per-

son who has used this system, as applied to the modern languages by Ollendorf and Manesca, feels its superiority over all other systems.

Yet, I do not contend that Dr. Arnold perfected his system. His works are defective. I do contend, however, that his system is the only true system. Drs. Anthon and Harkness, in their elementary works, have adopted it, though in a somewhat modified condition; and it has been introduced, more or less, into the new editions of every standard elementary work in this country and England. S.

Boston, Nov. 21, 1865.

MR. EDITOR.—You are rather severe in your editorial on the "Ignorance of Teachers," in your November number. Just when we were giving you great credit for a fearless advocacy of true principles, without regard to the interest of publishers, or favor of friends, you turn the same keen weapons upon us. It may be all true; but that is just why we do not relish it. I do not doubt that the storm of indignation, raised by this *exposé*, will be wafted on such a tornado of remonstrances, that this little note will lie unnoticed among more important papers; yet I must mention my apology; for so long as I am a teacher, I will not submit to such a castigation, without showing some signs of life. I am astonished, sir, that you could so far presume upon the stupidity of teachers, as to tell them such unpalatable truths. You would not dare tell the clergy half the truth, nor the legal profession, nor even the editorial fraternity.

Now, Mr. Editor, whose fault is it that we are not as *smart* as other men? Are we to blame, because we can not endure the vitiated air in school-rooms that were never designed to be ventilated? Are we weaker than others, because our associations lower us? With your extended views of the "formation of human idiosyncracies," you can not be ignorant of the fact that mind acts

on mind, as certainly as, by the eternal laws of attraction, matter acts on matter; and that if we associate with the low, the ignorant, and the rude, even among our pupils, we lose the "grace" which our more favored brethren enjoy, who walk among the kings of the earth. If more of pleasure, and less of the sternness of duty had fallen, with the sunlight of prosperity, upon us, we, too, might have "graced your parlor," and have been less "dogmatic," and even less "servile;"—*servile*, ah, that is the unkindest cut of all! I beg you to observe, good sir, that when we bow a little lower than usual to your distinguished friends, it is through no want of self-respect; nor is it through any desire to flatter *you*. We have learned that a proper respect for good and true men is a rare virtue among our youth. What we teach them, shall we not practice?

And, besides, it is ridiculous for us to aspire to the dignity of a learned profession, is it? I think I see, Mr. Editor, under all this censure, a kind intent; but couldn't you have sugar-coated the pill a little, to make it more palatable? Do allow us to *aspire*, even if that aspiration is fruitless. You will surely give us the chance which our *darker brethren* now enjoy, of trying our powers on a higher plane than heretofore?

But is there no excuse or palliation for these facts? The poor overworked teacher is cramped within the limits of five hundred a year or less, while the easy parson, his neighbor, feels that a thousand a year is quite insufficient. And then, what do most parents care for a teacher? How highly do they value his services! How slow they are to acknowledge or pay for superior excellence! It is not wonderful that our more active men leave the *profession*—for so I choose to call it—of the teacher, and take a position in life where merit can find higher appreciation and better pay. But enough! The subject is too broad for a hasty note. When occasion requires it, Mr. Editor, you may count on me for a defence of the brotherhood. D. P.

EDUCATIONAL INTELLIGENCE.

NEW YORK.—The autumn institutes for teachers have been well attended, and much has been accomplished in training the teachers for the winter campaign.

The institute of the western district of Monroe County closed a two weeks' session on the 20th of October. Prof. Hoese, of Lima, and Dr. Cruikshank, of Albany, were the regular instructors. Spicy and interesting lectures were delivered by these gentlemen, by Dr. Robinson, of Rochester University, and by several other earnest educators.

Miss Potter, of Falley Seminary, gave some good readings. About two hundred teachers were in attendance, and the interest was well sustained throughout.

— The Teachers' Institute for the Northern portion of Cayuga County, was held at Meridian, commencing Monday, October 9, 1865, and continued two weeks. About one hundred teachers were in attendance; and so far as known, all felt well paid for their time and expenses. They were thor-

oughly instructed in the various branches taught in our common schools, by Commissioner Wilkinson and Professor Arnold, assisted by other experienced teachers.

— David Beattie, Esq., of Dunkirk, N. Y., writes under date of October 14th: "The annual session of the Teachers' Institute of Chautauque County closed yesterday. For two weeks the inhabitants of lovely Fredonia have welcomed to their homes an unusually large concourse of teachers. The catalogue will embrace about four hundred and fifty names; and a very large percentage are names of those who attended regularly throughout the session. The instructors were Dr. French, of the State Normal School at Albany; Mr. Barker Price, of Grammar School No. 7, of Buffalo; and Mr. Wedge, of Fredonia. The instruction was mostly of a thorough and practical character, and from the force of circumstances, in the *lecture* form. The best of feeling prevailed. The *strict discipline* maintained by the commissioners is worthy of special commendation. The services of Dr. French are already bespoken for the coming year, by a unanimous voice of the teachers present. This is a good measure; as that gentleman will be able to make his instruction a *continuation* of the present term's work."

"The proceedings concluded with a grand sociable and promenade-concert. All will remember these two weeks as a bright spot in life. We claim to be the banner county. Who will dispute our claim?"

— The friends of the University of Rochester will rejoice to know that the full sum of one hundred thousand dollars has been subscribed for its additional endowment. The whole number of subscribers to this sum is thirty-six, and the largest subscription is \$25,000, by Mr. Tracy H. Harris, of the Madison avenue church of this city. It was Mr. Harris who first responded, in the sum of \$5,000, to an editorial article, published last year in the *Examiner*, on the necessities of the University, and the claims of such institutions on the benefactions of men of means. This was the beginning of the subscription, which Mr. Harris himself has had the honor of closing by an additional \$20,000. The next largest subscriber is the Hon. William Kelly, the Chairman of the Board of Trustees, for \$10,000; and \$500 is the smallest amount given by any one individual, except one of \$300, and another of \$100. The good work thus successfully completed, will be felt in all the future history of the University. — *Examiner*.

— At a meeting of the Cornell University, September 5th, the Board of Trustees was formerly organized, and measures adopted to secure the munificent donation of half a million of dollars from the Hon. Ezra Cornell. A committee reported that

the gift would be in the form of a bond, with good securities, paying not less than seven per cent. interest.

— Union College, at Schenectady has recently adopted two Baccalaureate courses for the election of students, equal in length, and designed also to be equal in amount of study and discipline. Brown University has for several years been acting upon this principle. The University of New York, and Rutgers College, of New Jersey, some time since, adopted the same plan.

NEW ENGLAND.—The report of the Trustees of the proposed Vermont Agricultural College, has just been laid before the Legislature. It announces the not unexpected fact that it is impossible to raise by subscription the \$100,000 which the charter requires as a condition precedent to the continued existence of the corporation. Almost all the subscriptions were made contingent upon the college being located in some specified place; and not more than \$25,000 could be secured even in that way. Finding it impossible to establish the college as an independent institution, the trustees opened negotiations for a union with one or more of the existing colleges. Middlebury wholly declined such a union; Norwich did the same at first, but afterwards expressed a willingness to reconsider the subject. The University of Vermont was more favorably disposed, and at length the trustees of the two institutions agreed upon a plan of union, which, if sanctioned by the Legislature, will consolidate the two, and secure, as is hoped, all the advantages of both. A bill for that purpose is now pending, and is quite likely to be come a law.

— At the late competitive declamation at Harvard College, "open to all applicants from the new freshmen class, the first premium was awarded to a student who lost his arm, serving as a captain in the Confederate army; the second, to a young man of negro descent, the first undergraduate of that race who has ever been admitted into the university."

— A gentleman in New Orleans is said to have donated \$5,000,000 to Amherst College, Massachusetts. Perhaps, it is also said, Amherst College will believe it when they see the money.

— The last report of the American Education Society states that in 1860 eight principal colleges of New England made up a total catalogue of 2,264 undergraduates; but in 1864-'65 they together numbered only 1,848.

NEW JERSEY.—Efforts are being made to establish in Hudson City a free German American academy; and for the benefit of the enter-

grand concert was given by the "Luther Choir" in that city on Monday st.

SYLVANIA.—The yearly income of College is about \$200,000; and there in the institution five hundred and ee orphan boys, with thirty-seven s.

LAND.—The colored people of Baltimore purchased a hall, at a cost of and dedicated it to education and e.

IS.—The Chicago Board of Education, laborate report upon teachers' sala—that it is discreditable to a city like that the highest price paid to a teacher is \$500, while a large pro-of them do not receive sufficient ation for their services to meet their y expenses.

The number of pupils in the Normal ent of the Normal University, last s 282; in the Model School, 411; 3.

The proceedings of the Second An-vention of the Bryant, Stratton & mmercial College Association, re-eld at Chicago, have been published ndsome pamphlet of one hundred It gives a full report of the various ons, papers on Commercial Instruc- . The officers of the association S. Packard, New York, president; pencer, Milwaukee, vice-president; t. Chapman, Rochester, recording y; L. A. Gray, Portland, treasu- R. Felton, Cleveland, correspond- etary. The next convention is to at Cleveland, July 10, 1866.

NA.—The temples of learning seem be regarded with much reverence. perintendent of Instruction says: is one fact which stands out with ominence in nearly all my meetings stees—namely, a shameful abuse of property. It is stated that, in some e school-house doors are broken or down with rails, to let in parties k, cut, and break, or otherwise mar- ile the desks and other furniture, a species of barbarism that should ked, and checked at once. Every ouse is public property; hence, ev- , woman, and child should feel an in preserving this property. It is r set apart for the sacred purposes of n, and vandal indeed must be e ntonly impairs or abuses it." This of vandalism is not peculiar to Illi-

the several commissioners sustaining them will justify. The pupils evince an eager desire to learn, and are making rapid prog-ress. At Clarksville, twenty teachers will be employed this winter. At Nashville, Gallatin, Franklin, Columbia, and other points, earnest teachers are at work. The principal of the schools at Columbia, Mr. E. Moers, who has now only three assistants, expects to enroll eight hundred pupils this winter, and to establish twelve or more ad- ditional schools in the county. General Fisk and his subordinate officers afford the Freed- men Commissions all the protection in their power; deprived of such military protection, their schools, it is said, would be broken up in a week.

MISSOURI.—Professor James H. Robinson, of Danville, who was presented to the Grand Jury of Montgomery County one year ago, for teaching negro children to read, is now Superintendent of Public Instruction of Mis- souri.

—The First Annual Report of the Su- perintendent and Secretary of the Board of St. Joseph Public Schools furnishes some in- teresting facts. "The schools had been in operation a little more than a year, when, in consequence of the breaking out of the rebellion, your board found themselves de- prived of the aid which they had received from the State, and were thus reluctantly compelled to order the schools to be closed. By no means the least evil resulting to Mis- souri from the war, was the almost universal suspension of the public schools throughout the State. In St. Joseph the disastrous con- sequences were especially visible. Though the private schools were full, hundreds of children and youth were left without the means of acquiring even an ordinary Eng- lish education; no provision was made for their instruction, and they were growing up in ignorance, while acquiring on the street the habits which make them dangerous in society." Under the circumstances, it ap- pears, it was resolved at a meeting held in August, 1864, to reopen the public schools. The superintendent then appointed, secured teachers, prosecuted his work vigorously, and, as his report shows, has done much to remedy the evils which existed.

MISSISSIPPI.—The University of Missis- sippi, after a suspension of nearly four years, will soon be opened for the reception of stu- dents. The Rev. Dr. John N. Waddell is president of the faculty.

CANADA.—The Superintendent of Educa- tion for Canada East reports that three nor- mal schools recently opened are making fair progress. Five hundred and seventy-five pupils have received diplomas, of whom three hundred are now teaching. The local boards in the province last year licensed six hundred and thirty-three teachers.

ESSEX.—The freedmen's schools, un- management of Colonel John Ogden, tripling as rapidly as the means of

CURRENT PUBLICATIONS.

THE author of the latest popular series of English Grammars announces his intention to introduce "some radical changes in this department of education." In the preface to his first book, which is designed for beginners, he very modestly says: "The common mode of teaching grammar seems to us rather an inverted one. Children are worried for years in the abstractions of analysis and parsing, from which they often acquire a loathing and permanent dislike to grammar itself; yet, after all, when they quit school, most of them know, in regard to language, but little of that, for which, especially, they were sent to school,—namely, to speak and write their mother tongue with propriety;" and he proposes "to put the science of grammar upon a more simple, natural, and practical basis."

The book contains one hundred and sixty-eight pages. The first thirty-five pages contain one hundred and thirty-nine statements or definitions—"All the important ones (*definitions*) needed in the study of grammar." The remaining twenty-one pages of Part I. are occupied by short sentences, for the *examination* of the pupil, intended to illustrate the various properties of the nine "parts of speech." Part II. gives the inflections of nouns, lists of pronouns, conjugation of verbs, and other matter pertaining to Etymology, with little or no variation from the majority of writers on this subject; certainly with little, if any improvement. Part III. contains sixteen rules of syntax, with a few "correct" and "incorrect" examples under each; a "general formula" for parsing; a few pages devoted to the "analysis of sentences;" a few pages of false syntax; and a few pages of Orthography, Etymology, and Prosody, closing with the very modest suggestion, that the pupil "should now study Kerl's Common School Grammar."

On reading the preface, we naturally look for something new, in matter or in manner, which shall give promise of the accomplishment of valuable results. But we look in vain. While many of the definitions are faultless, and the illustrations apt, we find much that may fairly be criticised.

There are too many definitions, for the space they occupy, or for the declared purpose of the book; constituting a maze calculated to confuse and bewilder the minds of children. On page 26, we have the definition of a participial noun; on page 29, the definition of a participial adjective, and on page 30, a statement respecting the form of the present participle, and of the perfect participle, the *pupil not yet having been informed what a participle is*: which "seems to us rather an inverted" order. Several in-

congruities of this kind are found in the book, culminating, near the end, in this order of topics: "Letters," "Accent," "Syllables," "Words." How can the pupil use *accent* without *syllable*? or what significance have "*penult*" and "*antepenult*" without words?

On page 26 again, "A personal pronoun is one of those pronouns which distinguish the grammatical persons." Distinguish the "grammatical persons," *how*? In what way shall the pupil determine this? Again, "A relative pronoun is a pronoun that stands in close relation to an antecedent, and joins to it a descriptive clause." This may be true of the position and effect of the relative pronoun;—but is it a *definition*? What is a *relative* pronoun? is a question which this statement of the author does not answer.

Page 27: "A compound relative pronoun is, who, which, or what, with ever, or soever annexed." Yes! that is true of its formation in the examples given, and would be a correct answer to the question, "How are some of the compound relatives formed?" We say *some*, because "*what*," is generally considered to be a compound relative pronoun without the addition of ever or soever. Hence, justly may the reader exclaim, "Well! you have made the thing, Mr. Grammarian! but *what is it*?"

In the classification of verbs, page 31: "Verbs are divided, according to their relation to subjects, into finite and not finite." Is this true; are verbs so divided? Not, does any other grammarian so divide them, but, *can they be so divided*? Are the third singular present *laughs*, and the present infinitive to *laugh*, different verbs in *class*, or different parts of the *same verbs*? If they are different parts of the *same verb*, how are they *different classes of verbs*? "A finite verb is a verb that predicates the act or state of its subject." Is it? What does finite mean? What constitutes a finite verb?—the fact that it "predicates the act or state of its subject!" Is there no better reason? Then what is *help*, in the entreaty, "Hercules, help me!" Is it a "finite" or "not finite" verb? Does it predicate any thing of its subject? Certainly not, because predicate means to affirm, and nothing is affirmed. Why then is not the imperative classed among the "not finite," where, *according to the definition, it belongs*?

"A verb that is not finite does not predicate the act or state of its subject."

"Verbs that are not finite may be divided into two classes—infinitives and participles." "There are two infinitives: the present and the perfect." "There are two participles: the present and the perfect." There are then, according to this, two classes of "not finite" verbs, and two in each class—four in

(1) FIRST LESSONS IN ENGLISH GRAMMAR, by SIMON KERL. A. M. Chicago: S. O. Griggs & Co. 168 pp. 50 cts.

ly formidable classes! Our author "there are two participles;" and yet, conjugation of verbs, in Part II., he bly gives us three. Which is the number?

32: "To, the sign of the infinitive, ted, when the infinitive is combined a auxiliary verb: Example, "I can dy—i. e., I am able to study." Aux- verbs are such as may, might, can, shall, will, etc. We *may* (to) accept raddle, or we *might* (to) accept it, or *d* (to) accept it; but it is hardly probat we *shall* (to) accept it: though, s, we *ought* to accept it, since the *to*, last clause, is not omitted.

35: "Hence there are auxiliary verbs press voice; as, *was* captured." *Was d*, is evidently in the passive voice; the auxiliary *was* expresses *voice*, it es *passive* voice; and hence, *was* wri- the sentence, he was writing, must rb in the passive voice.

65: "The nominative and the objec- e of nouns are alike. The nomina- d the objective case of pronouns are ly different." If the "*case*" "*are*" rith the noun, and the "*case*" "*are*" t, with the pronoun, why *are* it so? author doubtless intended this: The tive and the objective *cases* of nouns e. But are they alike?

o *objective case* is like the *nominative* en the two constitute but *one case*. ave sufficiently extended our notice, cannot refrain from giving Mr. Kerl's ion of some of the "marks" in punc-

"The period," he says, "denotes rest pause, or a full stop. The colon the next shorter pause. The semi- notes the next shorter pause. The denotes the shortest pause." Nothing is given; and the pupil is left to con- how *long* the "longest pause" is, and rt these "shorter" pauses are. But e any thing to do with these pauses? not often occur, in a discourse, that a suspension of voice is required at a than at a period? What does our mean by "longest" and "shortest"? fess our inability to comprehend him. : are many other defects in the book, ninent, perhaps, than those we have et of sufficient importance greatly its usefulness. Rewritten, rear- and pruned of its inconsistencies and ties, it might be a valuable book.

ig the many biographies of the late at we have seen none, which, for mprehenion of its subject, perspicu- yle, and unflagging interest of nar-

rative, have impressed us more favorably than that from the pen of Dr. Brockett. Abraham Lincoln, from his boyhood to his death, stands out unmistakably as the central figure of the book; and, unlike some other works of the class, in which the subject of the biography is made merely a hook upon which to hang a history of the times, or of a particular political party, this "*Life*" is of the *bona-fide* sort, in which contemporaneous history is made to serve its legitimate purpose. We particularly admire the clear, easy, and unaffected style in which this book is written. With sufficient animation, at times rising into eloquence, it never wearies the reader with abstractions, or "overcomes" him by sounding phrases. It is, in this respect, like the conversation of a sensible well-bred person addressed to every-day people—in fact, a book for the people's reading. We wish more of our authors possessed this happy knack of writing with vivacity, ease, and a sensible use of homely Saxon.

The documentary portion of the work, such as addresses, messages, orders, etc., are presented with sufficient fullness to illustrate both the official life and the personal characteristics of Mr. Lincoln—who, in the preparation of State Papers, had a style pre-eminently his own. Throughout the whole biography, also, the author seems to have preferred to let Mr. Lincoln tell his own story as far as possible; and the book is crowded with choice anecdotes and sayings of the President, and with such interesting detail of his personal and private life as enable us fully to comprehend his character.

Mr. Wylie's book,* which he has been so long and so carefully preparing, is now nearly ready. In its preparation, the earnest author has been aided by working Christians everywhere. Among them are the names of pastors of flourishing churches, editors of leading and influential papers, presidents and professors in colleges, teachers in seminaries and schools, and business men who find time for culture and devotion. All these, side by side, give evidence of Christian oneness in purpose, work, and worship. The object of the book is to aid in *educating* (both by instruction and development) every student as an accountable religious being, in the performance of his highest duty, and the enjoyment of his greatest happiness.

The plan observed in the preparation of the book has been as follows: (a) To form an outline of the great doctrines and duties of religion, as these regard God and man; giving prominence to such as especially claim the attention of youth, and tend to shape the course of life. (b) Selections of Scripture were then made, enforcing and illustrating the given topic by precept, narrative, etc.

FE AND TIMES OF ABRAHAM LINCOLN, Sixteenth ent of the United States. Including his Speeches, res, Inaugurals, Proclamations, etc., etc. By L. CKETT, M. D., Author of "Our Great Captains," anthropic Results of the War," etc., etc. Phila- : Bradley & Co. 8vo, pp. 750. Portrait and three tions.

(3) WORSHIP IN THE SCHOOL-ROOM, by REV. W. T. WYLIE. 8vo, mor. clo. extra. 624 pp., \$2.50. New York, Philadelphia and Chicago: Shermerhorn, Bancroft & Co.

(c) After that, appropriate psalms and hymns were chosen, keeping constantly in view the combination of strength and beauty, so that the choicest spiritual and poetical productions of our language, in youth, might be treasured up. (d) The adaptation of music to the hymns was considered a most important and difficult matter: several leading composers were consulted, and the final arrangement and adaptation of the music to the words was made by T. J. Cook, of New York, whose name is a guaranty for the judicious execution of the work. (e) In view of the fact that many young teachers might hesitate, unaided, to lead their pupils in prayer, each page of the lesson was placed in the hands of some earnest Christian educator, and after its perusal, a prayer was written by him, adapted especially to that particular lesson. We have more than two hundred and fifty leading minds, of all evangelical churches in our land, participating in the service of prayer, thus securing variety, freshness, and adaptation.

An examination of early sheets of the book assures us that the work is well done. And educators everywhere will welcome it as heartily as its great merits deserve.

Our recent national troubles have caused a new phase in book-making, by the introduction of what we may call war literature. Histories, biographies, narratives, relating to the war, outnumber the battles fought and the brigades engaged. Not the least interesting of these war-books are those describing the sufferings of our soldiers in Southern prisons. Most of the narratives of this description are inferior as literary productions; and although they often bear internal evidence of not being "plain, unvarnished tales," they are interesting and valuable. The most comprehensive of these is that published by the Harpers.⁴ It is more of a compilation than an original work, comprising not only the experiences of the author, but the narratives of various persons who have enjoyed the tender mercies proffered in Southern prisons and hospitals. Some of the writers show a vulgar bragging spirit, and boast of acts which, on the part of the Confederates, would not have been tolerated on Northern ground. But the book gives the most vivid, and perhaps the most reliable view of prison life in the Confederacy which has been presented. The publishers have made it a handsome volume, embellishing it with humorous and historical illustrations; and it is the work which must be relied upon at present by all who would depend upon a single volume for a North-side view of Southern prisons.

Santa Claus has made a hit.⁵ Sly old rogue, how he must have laughed as the happy thought struck him! If he laughed as we did, and had to try as hard as we to prevent a displacement of ribs, while viewing his work, he must have regretted his comicality. And yet we laugh again, as we turn to this ludicrous manifestation of philosophy. See! the gradations which it is said can be traced from the lower order of animals to man, are here brought to view in such a way that he who runs may not only read, but reading may laugh to his heart's content. Here they are! not described in didactic prose, not in jingling verse, but delineated by the draughtsman's skill, standing in full-length portraits. See that cat in the corner of the picture; it is a cat, "and nothing more," except the ribbon about her neck. But how admirably Tabby's broad face is reproduced in the figures of the picture; each a little more human, till we see the high cheek bones, the cunning but semi-carnivorous look of the belle. But, with Tabby's riband transformed to a fashionable neck-tie, and with all the paraphernalia of *la mode*, she is still too nearly affiliated with her feline prototype to tempt one to a kiss in the dark without expectation of a good clawing in return. Next we have a goat, as a type of certain characters often seen. His successors in the picture, notwithstanding their cigars, eyeglasses, and walking-sticks, are so goat-like in aspect, that we look to see whether Santa Claus has not represented them with horns sticking out from their narrow-brimmed hats. If any of our readers has a vixen-wife or a spinster-aunt with a small restless eye, a long neck always bent forward to put a hooked nose into the carion of gossip or scandal, he will here trace her pedigree back to its source in the vulture tribe. The "Pig Tribe," the "Gorilla Tribe," the "Donkey Tribe," and others, are represented in similar manner. They are "fancy sketches" in a peculiar sense. But there is a strong background of philosophy for them all. Whatever may be said about the origin of species, every thinking man knows that the instincts and propensities of the lower animals are often strikingly apparent in the human race, and that they almost invariably are accompanied by corresponding cranial and facial peculiarities. If we could for a moment think of criticising such unpretentious but felicitous work, we could hardly find fault with it, even in the gradations and progressions which have most taxed the artist's skill. Santa Claus has proved himself an artist, and has furnished a scientific caricature, which, while making school children boisterously merry, will provoke an audible concatenation among teachers and philosophers.

(4) PRISON LIFE IN THE SOUTH; at Richmond, Macon, Savannah, Charleston, Columbia, Charlotte, Raleigh, Goldsborough, and Andersonville, during the years 1864 and 1865. By A. O. ANNOY, late Lieutenant First New York Dragoons. With illustrations. New York: Harper & Brothers. 12mo. pp. 374. \$1.75.

(5) THE ORIGIN OF SPECIES; OR, WHAT WE SPRUNG FROM. Showing the Advantage of Civilization. New York, Philadelphia, and Chicago: Schermerhorn, Bancroft & Co. By mail, in illustrative fancy paper case, 25 cents.

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